CHUNGHO U.S.A. Simply pure.™ Simply the best.

Technical & Repair guide for **ChungHo** **Super Iguassu ICE 900**

IGUASSU ICE 900
Technical Manual

call **888.758.1234** for further technical support

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Designation of Components

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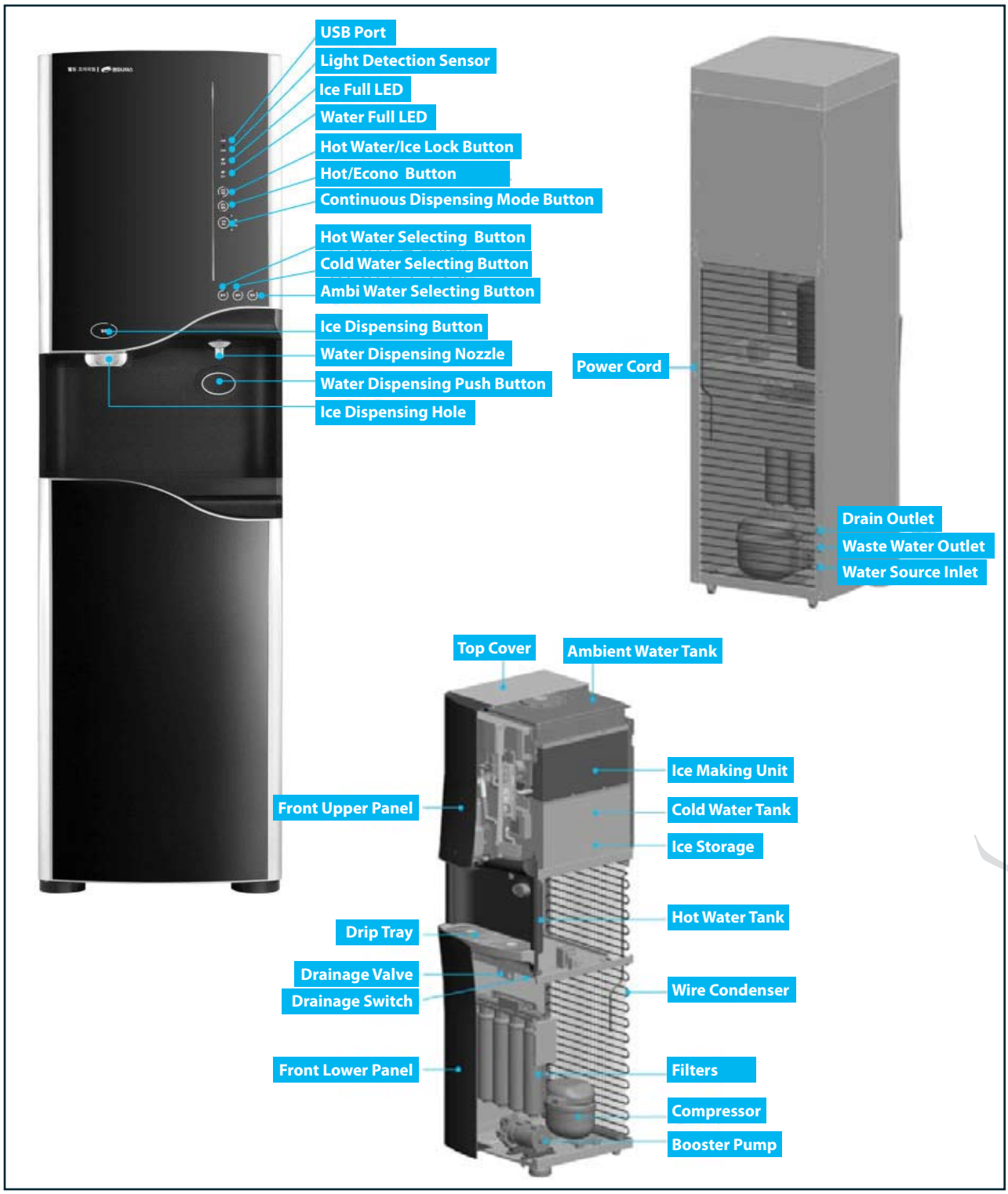

Product Features

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Water Purification System Providing an Integrated Ice Making Function

IGUASSU ICE 500 is designed for both convenience and practicality, as it utilizes a compact ice making system, designed to obtain cold water for the production of ice. With an ice making mechanism featuring an ice tray, which utilizes the freezing point method as well as reverse osmotic water purification.
(Patent application: No.2005-99663, 2005-365293, 200510127096.9, 11/342,117)

24 Hour Natural Water Circulation System (N.W.P.W.)

ChungHo purification systems are designed to allow water to continuously flow for 24 hours within the water purifier by adopting a natural circulation method. This mode, called N.W.P.W. applies the natural weight of water pressure in order to supply clean and fresh water at all times.
(Patent: No.105585)

Pure Ice Production Utilizing the Freezing Point Method

The Freezing Point Method produces only the purest ice by supplying purified water to the ice making unit. The freezing point principle states that the purest water freezes at 32 while non-pure water will freeze at a temperature below that.

Energy Saving Function

IGUASSU ICE 500 is an energy-efficient product. It delivers purified water to the ice making unit in order to make pure ice while simultaneously sending cooled water to cold water tank. It allows the system to maintain a constant cold water temperature, thus inherently preventing water waste and helping to conserve energy.

Automatic Ice Dispenser

Upon pressing the ice dispenser touch sensor button, the system then slowly rotates the ice storage plate via an integrated motor in order to automatically replenish the ice supply within the storage housing.

Touch Sensor Application

Breaking away from traditional button applications, IGUASSU ICE 500 has a built-in touch sensor application. The easy-to-use sensor application is designed for effortless and enjoyable drinking water and ice.

Infrared Water Level Detection Sensor

Infrared OLC sensor is applied in IGUASSU ICE 500. It provides more improved detection accuracy than traditional mechanical detection types, thus allowing stable water level detection. The signal is connected to a controller in order to automatically adjust purified water levels.
(Patent: No.426182)

Safety Function (Ice Dispensing & Hot Water Locking Function)

Setting the safety function using the LOCK/ICE touch sensor button prevents ice cube and hot water being dispensed from the unit. It helps to prevent burns and other unwanted injuries for children, the elderly and any other vulnerable user.

Continuous Water Dispensing Mode*

IGUASSU ICE 500 has continuous water dispensing function, which allows users to dispense cold/ ambient water continuously. The system maximizes user convenience since a set volume of water, either 0.5l or 1l, can be dispensed with a touch of buttons. *Not available for hot water.

Automated Operation via Sensor and Micom

This system internally provides temperature control for the ice making process/cold water process by way of an ice detection sensor, so that ice making, ice removal, and cold water operation, via Micom, may be automatically controlled in order to maintain an optimum operation.

4 H2O(Ambient Water/Cold Water/Hot Water/Ice) 1 Product!

With improved convenience, IGUASSU ICE 500 offers more production and supply power by providing purified ambient water, cold water, hot water, and ice from one product.

Separate Water Delivery from a Single Spout

Ambient, cold, and hot water come out from a single spout, but independent water hoses are applied so that each water is not mixed, thus improving overall satisfaction in preferred temperature from the first drink.

Noise Prevention

Operating noise level is significantly lowered due to applying a dual noise prevention material, and utilizing a shock mitigation structure at ice storage house, etc.

System Display Functions and Safety Reinforcement

The safety features of the product have been enhanced in order to prevent various problems. The system will inform the user(s) of abnormal occurrences through a flashing display icon and by automatically stopping the ice making function, cold water function, and water purification function when an abnormality in the system is detected.

Automatic Water Dispensing

The system is convenient to the user because it enables ambient water, cold water, and hot water to be taken at the press of a button.

Beep Function

It provides customers a convenient reminder that a system setting has been changed as sounded via beeping (ding~, dingdong~, etc.) and as applied via system touch sensors.

Wire Condenser (Natural Convection)

Using natural convection, the system wire condensers are rated to reduce noise and thus provide further convenience for the user.

Adoption of New Coolant

IGUASSU ICE 500 has adopted an environmentally friendly cooling system in the new R-134a, a coolant that will not cause ozone layer destruction and global warming.

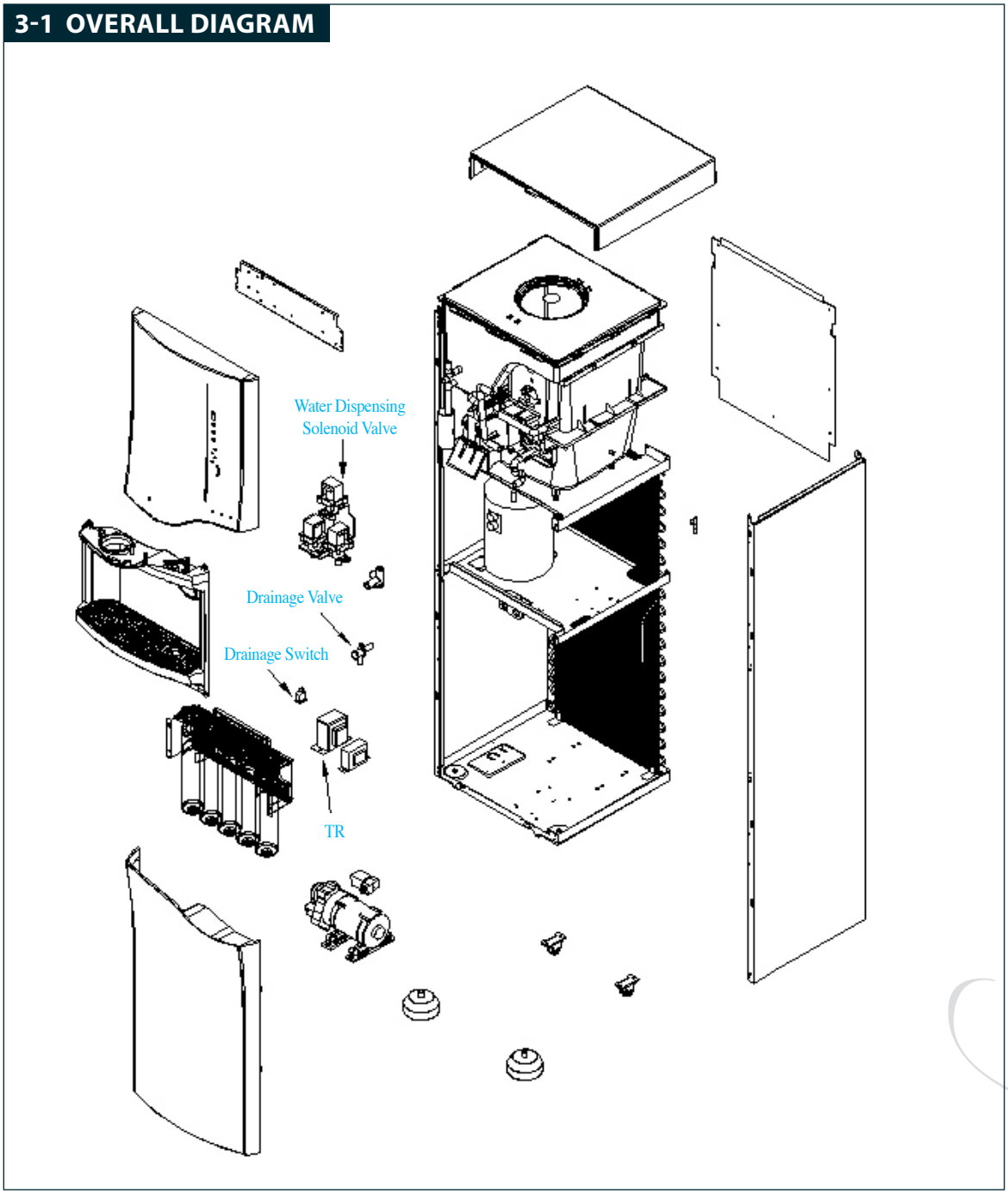
Default Function

Cold water, which is most frequently used, is selected by the system default. Also, the system is designed to automatically convert to cold water mode when in queue.

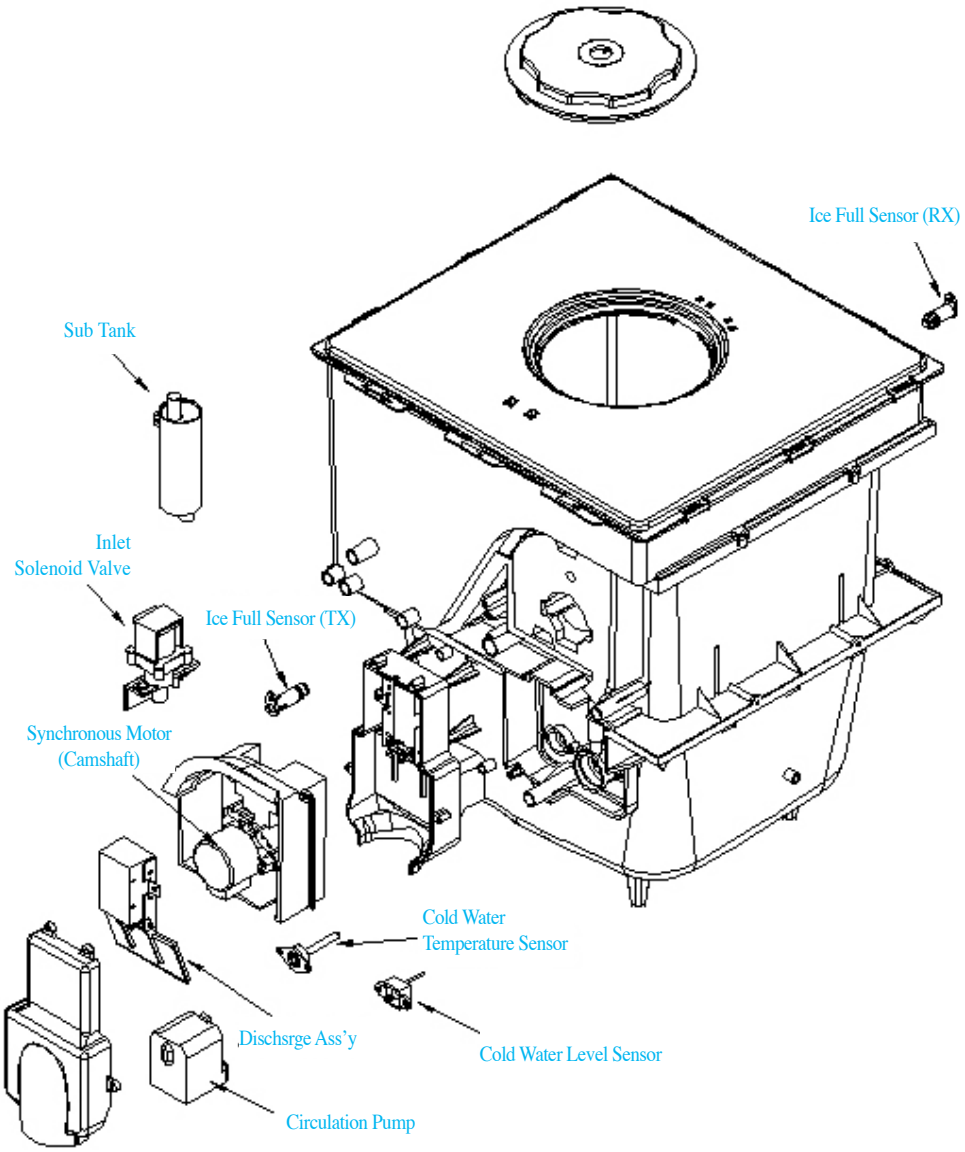
Exploded Diagram & Parts List

3

3-1 OVERALL DIAGRAM

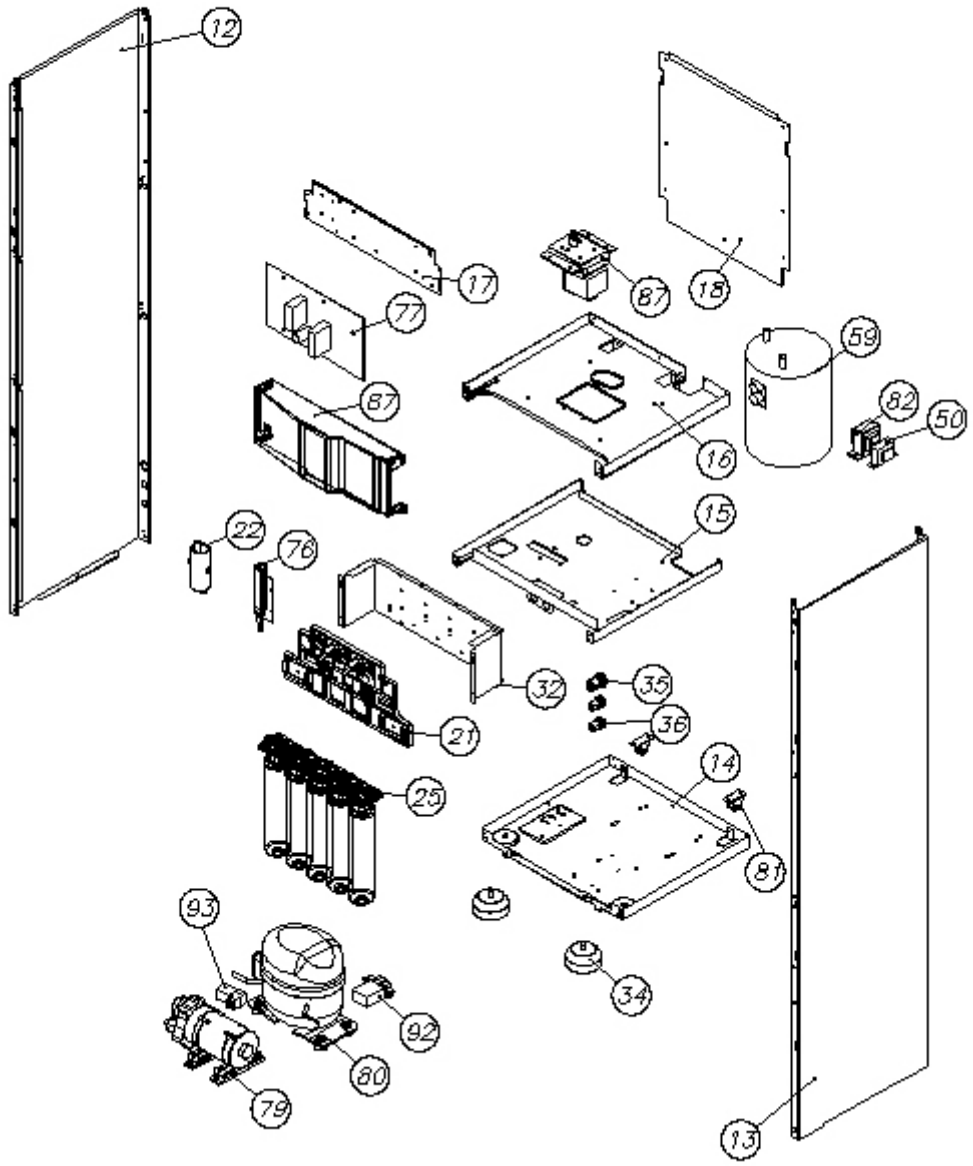


3-2 ICE MAKING DEPARTMENT



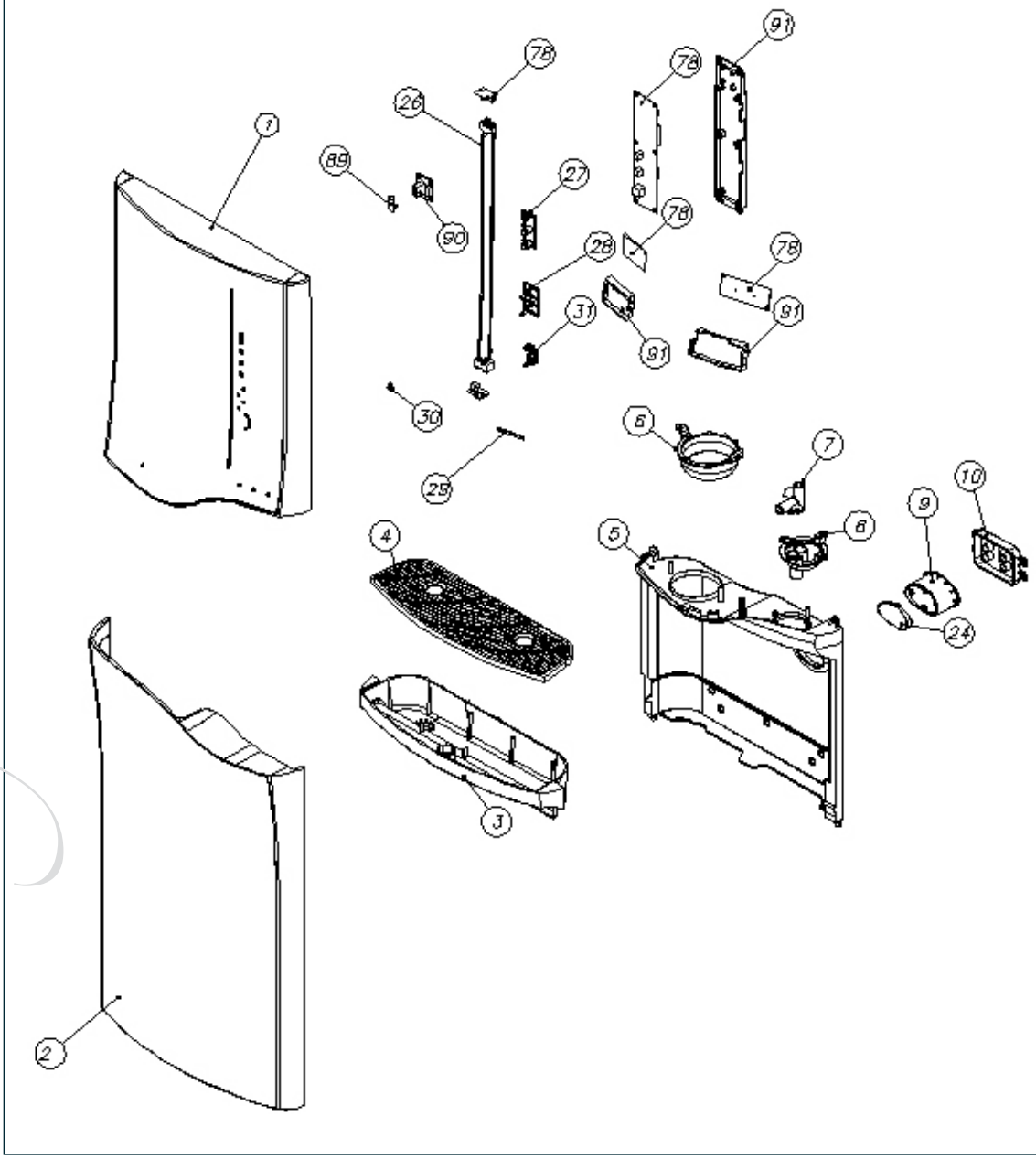
Exploded Diagram

3-3 DETAILED EXPLODED DIAGRAM (1)



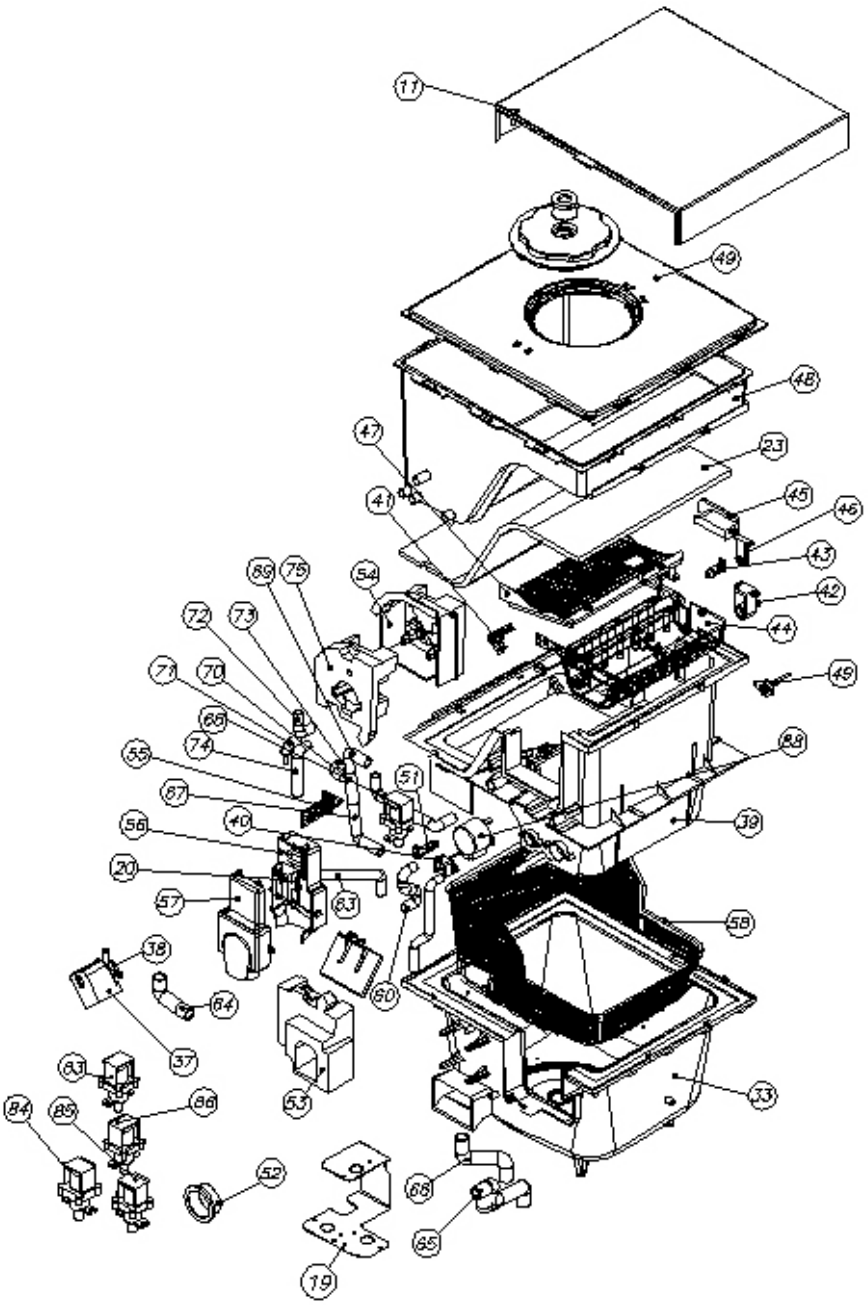
Exploded Diagram

3-4 DETAILED EXPLODED DIAGRAM (2)



Exploded Diagram

3-5 DETAILED EXPLODED DIAGRAM (3)



Exploded Diagram

3-6 PARTS LIST

No	PART NAME	Q'TY	MATERIAL	No	PART NAME	Q'TY	MATERIAL
1	FRONT UPPER	1	ABS+Acryl 65%	48	Ambient Tank	1	PP
2	FRONT LOWER	1	ABS+Acryl 65%	49	Cover-Ambient Tank	1	PP
3	Drip Tray	1	ABS	50	Stabilizer	1	
4	Grill - Drip Tray	1	ABS	51	ICE FULL Sensor CASE (R)	1	ABS
5	FRONT MIDDLE	1	ABS	52	O-RING Circulation Pump HEAD	1	SILICONE
6	DISPENSER DECO	1	ABS	53	Cold tank Ice making Unit EPS	1	EPS
7	Manifold (oval) Cold/Hot Separate	1	PC/ABS	54	Drip Tray Motor S/W Panel	1	ABS
8	FAUCET DECO-Cold/Hot Separate	1	PC/ABS	55	SOLENOID VALVE BRACKET	1	ABS
9	Dispensing Button	1	ABS	56	Ice Releasing GUIDE COVER (bottom)	1	ABS
10	Dispensing Button Cover	1	ABS	57	Ice Releasing GUIDE COVER (top)	1	ABS
11	TOP COVER	1	ABS	58	Noise reducing BASKET	1	LDPE
12	SIDE PANEL (L)	1	EGI 1.0t	59	HOT TANK ASS'Y	1	SUS 0.5t
13	SIDE PANEL (R)	1	EGI 1.0t	60	TUBE - Cold water dispensing	1	ELASTOMER
14	BASE PANEL	1	EGI 1.2t	61	TUBE - Ambi water dispensing	1	ELASTOMER
15	HOT TANK PANEL	1	EGI 1.0t	62	TUBE - Cold water Sol V/V In	1	ELASTOMER
16	ICE UNIT PANEL	1	EGI 1.2t	63	TUBE - Hot water In	1	SILICONE
17	PCB CONTROL PANEL	1	GI 1.0t	64	TUBE - Hot water Dispensing	1	SILICONE
18	REAR PANEL	1	GI 0.8t	65	TUBE - Hot water Sol V/V In	1	SILICONE
19	Bracket water dispensing Sol V/V	1	EGI 1.2t	66	TUBE - Hot water Air Vent In	1	SILICONE
20	Solenoid - DOOR	1		67	TUBE - Ambient Sol V/V In	1	ELASTOMER
21	Hanger	1	PP	68	TUBE - Cold Supply Sol V/V Out	1	ELASTOMER
22	SUB TANK	1	SUS0.7t	69	TUBE - Cold Supply Sol V/V In	1	SILICONE
23	INSULATION-lower ambient tank	1	EPS	70	Cold-Ambi Sol. Connetion Tee	1	POM
24	RUBBER-Dispensing Button	1	SILICONE	71	TUBE- Cold-Ambi Sol. V/V Connet	1	SILICONE
25	5 WAY SINGLE HEAD	1	PP	72	TUBE-OLC	1	ELASTOMER
26	LED Window - BAR	1	PMMA	73	TUBE- Cold-Ambi Sol. V/V Connet	1	ELASTOMER
27	LED Window - Full	1	PMMA	74	TUBE - Hot SUB TANK Connect	1	SILICONE
28	LED Window - Hot	1	PMMA	75	MOTOR PANEL EPS	1	EPS
29	LED Window - Cold/Hot/Ambient	1	PMMA	76	Level Sensor - Ambient	1	
30	LED Window - ICE	1	PMMA	77	PCB Controller (3 types)	1	
31	LED Window - CONST	1	PMMA	78	Display Module (3 types)	1	
32	BRACKET-FILTER	1	EGI 1.0t	79	PUMP-Water	1	
33	Ice Storage	1	PP	80	COMPRESSOR	1	
34	LEG	2	ABS(LG)	81	CASTER-linear	2	STEEL
35	BULK HEAD (3/8")	1	POM	82	TRANSFORMER	1	
36	BULK HEAD (1/4")	2	POM	83	SOL V/V - Inlet	1	
37	PUMP - Ice making	1		84	SOL V/V - Hot Water Dispense	1	
38	Ice making PUMP HEAD	1	POM	85	SOL V/V - Cold Water Dispense	1	
39	Cold water tank & ice making Unit	1	PP	86	SOL V/V - Ambi Water Dispense	1	
40	Cold water Level Sensor CASE	1	ABS	87	MOTOR-GEARED	1	
41	Drip Tray Motor Coupling	1	POM	88	MOTOR - Two-way Sync. Motor	1	
42	Rotating Drip Tray BUSHING (L)	1	POM	89	Rubber_USB	1	URETHANE
43	ICE FULL Sensor CASE (L)	1	ABS	90	PCB_USB	1	
44	Rotating Drip Tray	1	PC/ABS	91	PCB - Cover (4 types)	1	ABS
45	EVA. Fixed Bracket	1	PC/ABS	92	A.F.V	1	
46	Rotating Drip Tray BUSHING (R)	1	POM	93	SOLENOID VALVE	1	
47	ICE GRILL	1	LLDPE				

System Diagram

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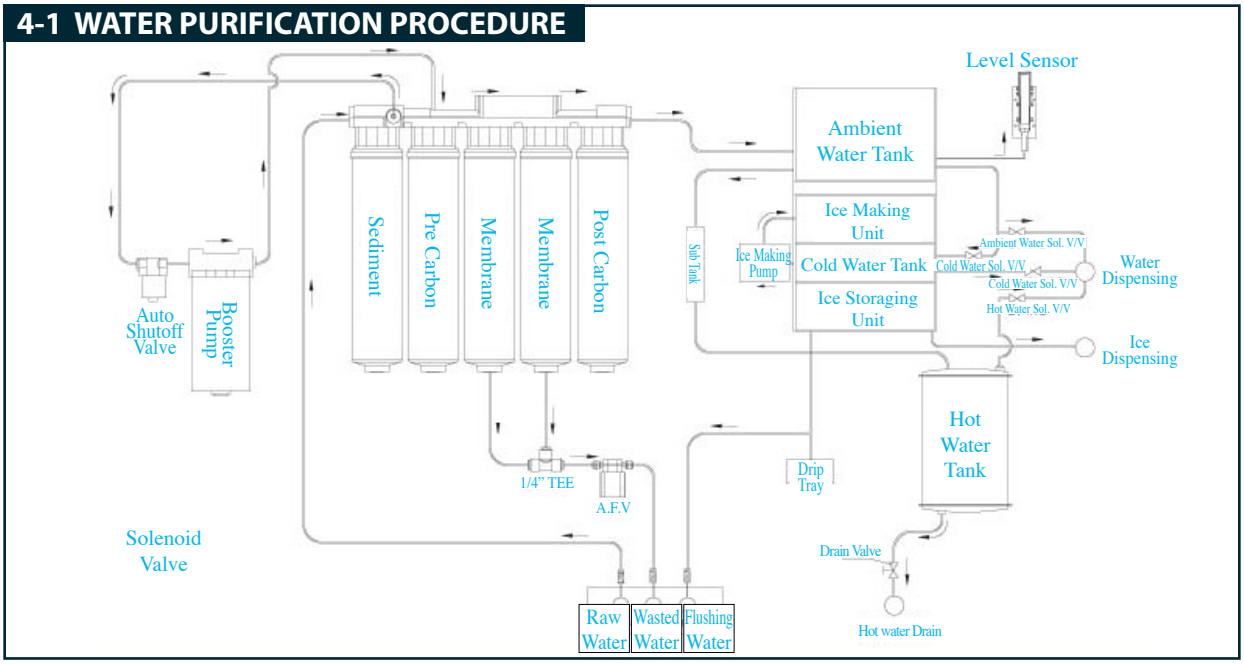
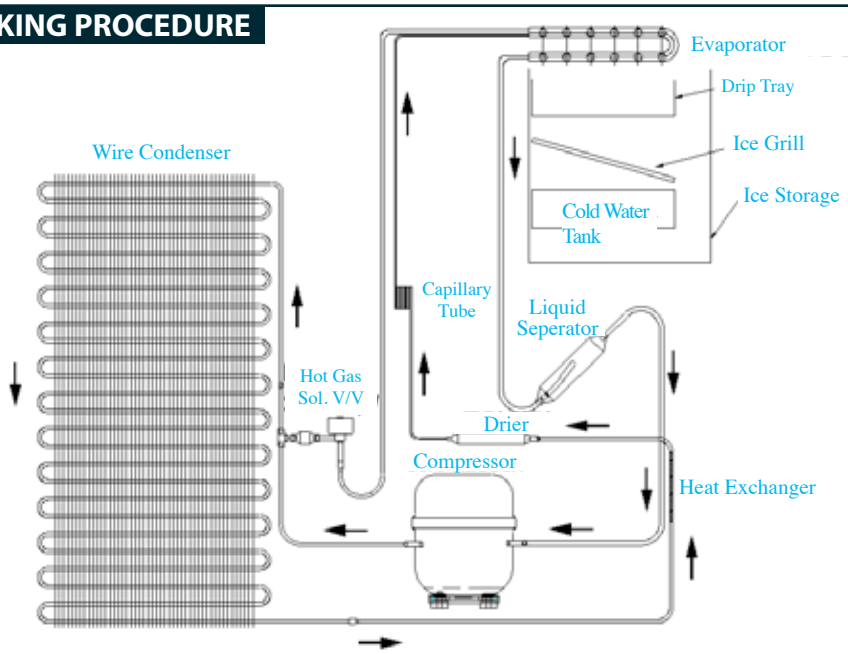
4-1 WATER PURIFICATION PROCEDURE



4-2 ICE MAKING PROCEDURE



Distribution Line Diagram

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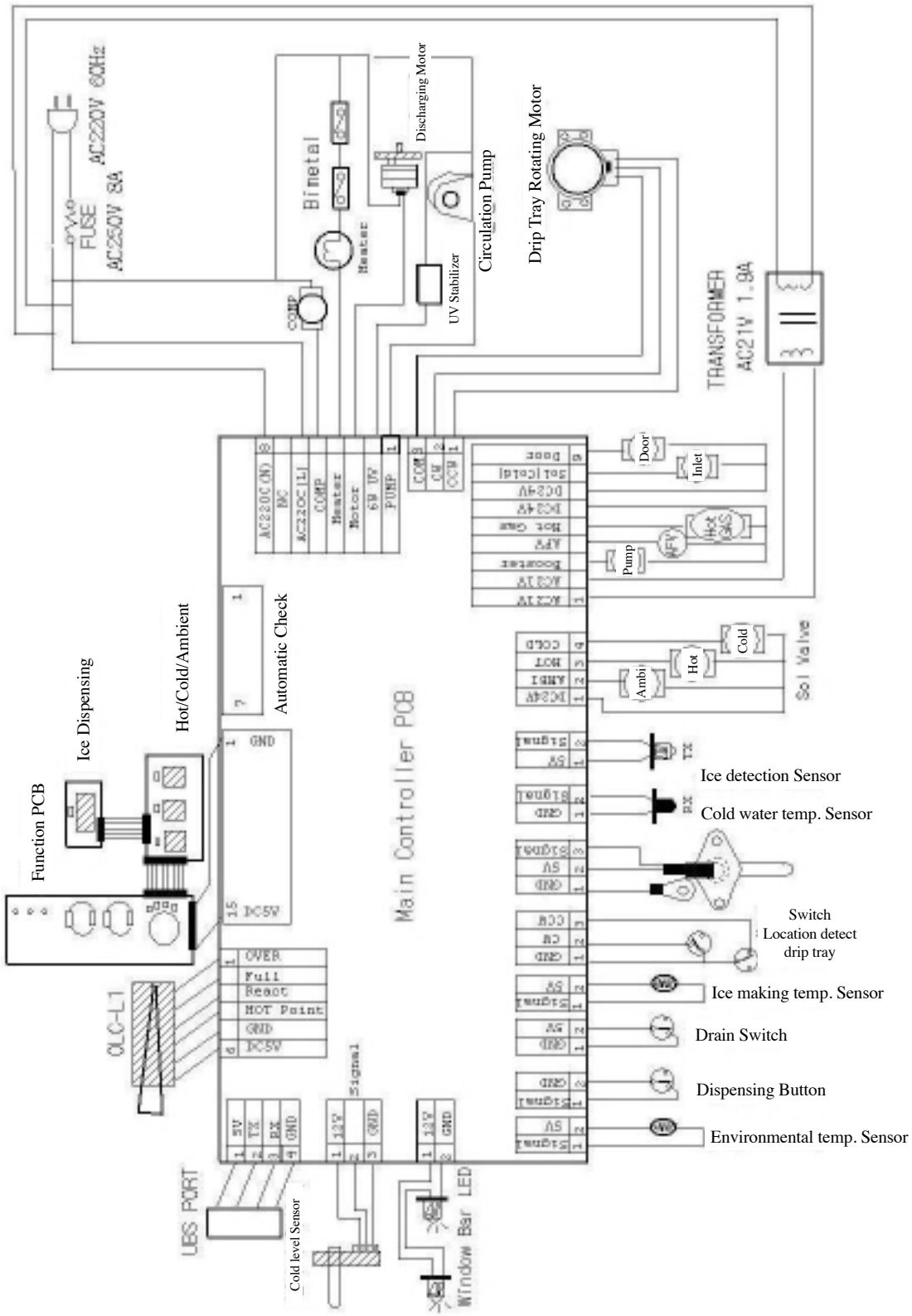

Product Specification

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Model Name		**Super Iguassu Ice (CHP-5070S)**	
Type		**Tri-Temp POU Cooler w/ built-in Ice Maker**	
Dimension		**16.9W x 19.4D x 58.7H (inch)**	
Rated Voltage		**AC 110V/60Hz**	
Power Consumption	Rated Consumed Power	**720W (Hot Water + Ice Making)**	
	Hot/Cold Water	**500W / 200W**	
	Ice Making	**220W**	
Storage House	Ambient	**4.5 Gal.**	
	Hot / Cold	**1.4 / 1 Gal.**	
	Ice	**8.8 lbs.**	
Monthly Power Consumption		**63.4 kWh/month (Hot + Cold)** **84.8 kWh/month (Ice Making+Hot+Cold)**	
Ice Making Capability	Room Temperature	**68°F (20°C)**	**86°F (30°C)**
	Time	**11 min.±1min. / one time ice makng**	**12 min.±1min. / one time ice making**
	Daily Ice Making Quantity	**44.1 lbs (20kg) / day**	**37.5 lbs (17kg) / day**
	Ice Size	**13g ± 1g x 12ea / one time ice making (1ea cold water tank submerging)**	
Heat Radiation Type		**Wire Condenser Type**	
Cold Water Temp. Regulation		**Thermistor**	
Hot Water Temp. Regulation		**Automatic Bimetal**	
Overheating Prevention System		**Manual Bimetal**	
Safety System		**Overheating Prevention System** **Water Level Detecting System**	
Cold Water Tank Water Level Adjustment		**Capacitance Sensor**	
Refrigerant (Refrigerant Weight)		**R-134a (98g ±1g)**	
Product Weight		**119.7 lbs.**	
Power Code		**86.6 inch**	
IP Class		**IPX1**	

Installation Precautions

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When installing the product, do not install it at the following places.

- Near fire
- Near flammable material
- Wet place
- A place exposed to rain and snow
- A place exposed to direct sunshine
- Near chemicals (volatile material, organic solvent, etc.)
- A place below 32°F or a place with the possibility of dropping below 32°F

When the product is installed in a dark place, and the power saving function is set, then hot water system may not operate even during daytime. (Install it at bright place.)

Use the following water quality ramge.

- Water Pressure : 7~120 psi (0.5~8.4 kgf/cm^2)
- Water Temperature : 39 ~ 100°F (4~38°C)
- pH : 5 ~ 10 - Hardness : 300 ppm or less - Evaporation remains : 500 ppm or less
- Water Quality : Biologically safe water quality

If you do not use water quality within the above range without prior discussion of our company, the product can be excluded from the stated warranty period.

When transporting the product, do not tilt it over 45°.

Severe tilting can be the cause of reduced performance.

A bad wall outlet or plug may cause an electric shock or fire, do NOT use them.

Do not connect hot water(over 100°F) to this product.

Leave approximately 8 in, between the wall, sides and rear surfaces of the product so that ventilation may be smoothly performed for safe operation of product.

When connecting tubing hose, take care so that the tubing hose is not be bent or pressed down by heavy objects, etc

If tubing hose in blocked, water does not flow smoothly and may cause malfunction of the product.

Adjust the hose so that the water discharged from the drainage hose may not splash onto the product's surroundings.

Brine water, or the water coming out through drainage lines, can easily be applied towards other water related needs, such as in bathroom cleaning, house cleaning laundering, washing, etc. in order to prevent waste of water. However, never use the brine water as drinking water or for cooking of food.

Raising the brine water and drain water over 1 ft. above the installation surface, or connecting them over 6 ft. away from the water purifier can hinder a smooth drainage process. In order to install the product in a location where the brine water and drained water line are located a distance of over 6 ft. from each, the user will inevitably have to install a separate drainage pump.

When installing another product (water purifier, shower softener, etc.) at the same location and the water is derived from the same installation source, prepare an independent drain line for each product.

Relocation/Installation Precautions 8

In case the product is needed to be transported, please make sure there is no water left at all inside of the unit before moving the product.

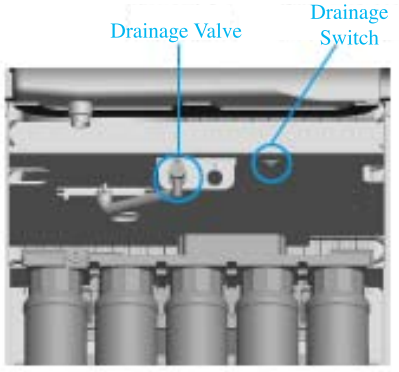
(If the product is moved without the complete drainage process as described below, it may cause serious damage to the product.)

1 **This is to be performed with the power plug inserted.**

2 **Remove the front lower panel by first pushing the cover down and then pulling it forward.**

3 **Turn on the drainage switch, and open the drainage valve, located at the bottom of the panel, to remove water remaining in the system.**

(When the drainage switch turned on, water purification and ice production stops, and "ICE FULL", "WATER FULL", "HOT/ECONO" LED flickers with a BEEP sound.)



4 **Remove cold water by pressing the water dispense button. In order to remove the water remaining in the cold water tank, tilt the product forward and do so until cold water does not**

5 **Take out the ice by pressing the ICE(ice dispense) touch sensor button.**

If there is no other option but to transport the product in an inclined position, transport the product in a backwards inclined position if at all possible.)

Installation

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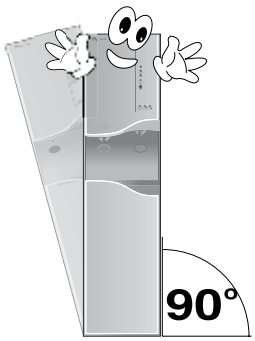
1 **Install the product on a level surface. (Change product level using the product leg adjustment and confirm the level surface a level.)**

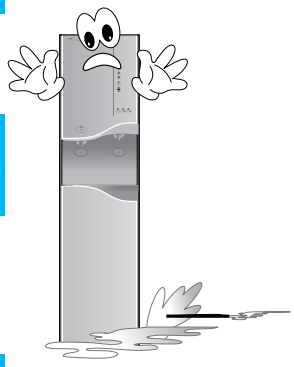


2 **Close off the water supply valve as supplied to each household. Then temporarily remove the connector part as provided from your given water source. Then connect the main water line adaptor.**

If the sealing O-ring at the connection piece is removed or damaged, it can lead to leakage.

3 **Connect a tubing hose into water source adaptor and then attach to the water inlet on the rear side of product.**

If tubing hose in blocked, water does not flow smoothly and may cause malfunction of the product.

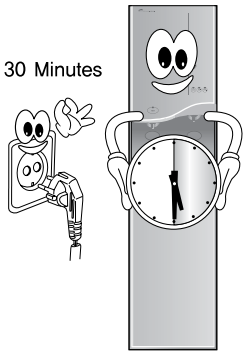


4 **Connect tubing hoses into the removed water(brine) and drained water connection part on the rear side of product and then connect tubing hose into the drainage hole in sink, bathroom, or etc.**

Install the removed water(brine) line and drained water line separately. If drainage dose not function properly due to improper installation, then water may flow back toward waterspout and cause an overflow.

5 **Adjust the tubing hose so that the discharged water(brine) and tap water tubing hose so that they do not splash into surrounding areas.**

6 **Open the tap water valve supplied into each household, and place the water source adaptor to the open position.**



7 **Check to see if water is leaking at any connection part.**

8 **For stabilization of the cooling system and for safe use of the product, insert the power plug into an AC 110V60Hz, 220V50Hz, 240V/50Hz and 220V/60Hz power outlet after 30 minutes after the installation of the product.**

9 **Check whether water is supplied into the inside of product and whether there is any leakage in or around the tubing connections.**

10 **Check whether water is coming out by pressing the water dispensing button 1 hour after purification has begun.**

11 **Use after water has flowed into the storage tanks.**

Usage

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10-1 DISPLAY (A)

USB	USB Port	USB connection can be used to connect diagnostic testing device or to charge USB compatible electronic devices. (Note: Do not charge more than 30 minutes.)
CDS	Light Detection Sensor	Detects amount of light around the unit, thus enabling auto ON/OFF for hot water. (when Econo function is set)
ICE FULL	ICE FULL	Lights up when ice storage house is full (yellow green)
WATER FULL	WATER FULL	Lights up when water tank is full (yellow green)
LOCK / ICE	HOT / ICE LOCK	Used when setting/releasing the Lock function
	LOCK LED	Lights up when setting the Lock function (red)
	ICE MAKING LED	Lights up when setting the Ice making function (red)
HOT / ECONO	HOT/ECONO	Used when setting/releasing the hot water & Economical mode ON/OFF
	HOT LED	Lights up when setting Hot water operation (red)
	ECONO LED	Lights up when Econo mode is on (red)
CONST.	CONST.	Used when setting/releasing continuous water dispensing
	CONST. LEDs	Lights up when setting the each amount of continuous water dispensing (red)

10-2 WATER DISPENSING & BUTTONS (B)

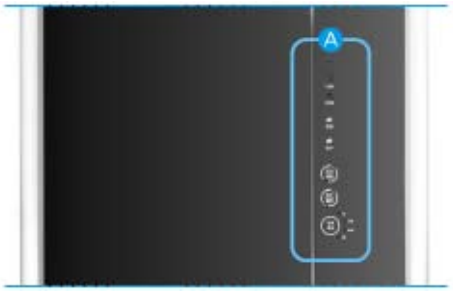
HOT	HOT (Hot Water Selection)	Used to dispense hot water
	HOT LED	Displays that hot water dispense was set (Red)
COLD	COLD (Cold Water Selection)	Used to dispense cold water
	COLD LED	Displays that cold water dispense was set (Blue)
AMBI	AMBI (Ambient Water Selection)	Used to dispense ambient water
	AMBI LED	Displays that ambient water dispense was set (Blue)
	Water Dispensing Button	Used to dispense water into a container such as a cup after selecting the desired water temperature among ambient water, cold water, and hot water
ICE	ICE (Ice dispenser)	Used to dispense ice
	ICE LED	Displays that ambient water dispensing ice (Red)

10-3 OPERATIONAL BEEP

Action	Beep	Remarks / Occurrence
During Power ON	**Ding Dong Dang**	**One Time**
During Key Input	**Ding~**	**One Time**
During Hot Water Lock	**Ding Ding Ding**	**One Time**
During Water Intake Start	**Ding~**	**One Time**
During Water Intake Ending	**Dong~**	**One Time**
During Overflow	**Ding Ding Ding Ding**	**One Second Interval**
During Ice Discharge	**Ding~**	**One Time**

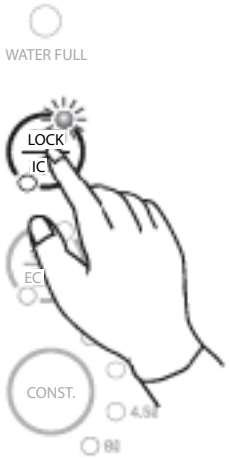
10-4 SELECTION / DESELECTION FUNCTION

Lock Function (Ice / Hot water locking function) Setting



1. Touch LOCK/ICE touch sensor button softly for over 3 seconds)
2. Lock lamp(red) is turned on and the lock function is set. (setting sound : Ding~ding~ding~)
3. Hot water dispensing selection and the ice dispensing function do not work after the lock function is set.
   * LOCK function helps to prevent spout of ice cube and burns by hot water.

LOCK Function Release



1. Touch LOCK/HOT touch button softly for over 3 seconds.
2. Lock lamp(red) is turned off and the lock function is released. (setting sound : Ding~ding~ding~)
3. Hot water dispensing selection and the ice dispensing function do not work after the lock function is set.

Ice Making Function Setting

1 Touch CONST button for over 10 seconds.

*As pressing the button, continuous water dispenser function is automatically set after 2seconds and Ice making function setting operates in 10 seconds. Continuous water dispenser function automatically is released after 5 seconds.

2 ICE LED (Red) is turned on as the ice making function is set.
(Setting sound: Ding~ding~ding~)

Ice Making Function Release

1 Touch CONST button for over 10 seconds.

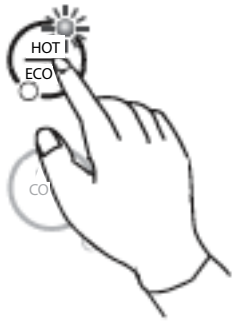
2 Ice Lamp (Red) is turned off and the ice making function is released.
(Setting sound: Ding~ding~ding~)

* When it is released, remained ice is dispensed until the ice storage house is being emptied. But ice-making function is disabled.

HOT(hot water) Operation Setting

If hot water operation display LED is turned on by touching HOT/ECONO(hot water operation/power saving selection) touch sensor button, the hot water system will operate.

*Hot water system is operated by a detection sensor which automatically detects the temperature inside of the hot water tank.



HOT(hot water) Operation Release

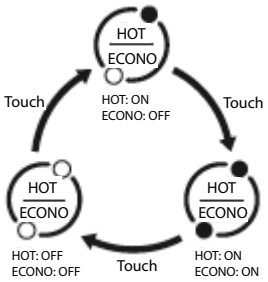
If the hot water operation display LED is turned off by touching HOT/ECONO(hot water operation/power saving selection) touch sensor button, then the hot water system stops.

ECONO(power saving) Function Setting

1 Touch the HOT/ECONO(hot water operation/power saving selection) touch sensor button.

2 Power saving display LED is turned on and power saving function is set.

* Power saving function is automatically set to turn on/off the hot water system through operation of light sensor detection in accordance to the brightness around the product while hot water function is set.



Operation conversion when touching the HOT/ECONO(hot water operation/power saving selection) touch sensor button.

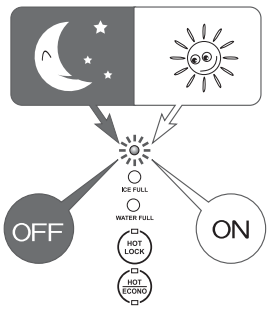
ECONO(power saving) Function Release

1 Touch the HOT/ECONO(hot water/power saving selection) touch sensor button.

2 Power saving display LED is turned off and power saving function is released.

*** Cautions during Use of Power Saving Function**

If power saving function is selected, the hot water system is automatically turned on/off according to brightness of the products surroundings, so hot water can not be immediately used after it becomes bright again around the product. Therefore, in order to use hot water all the time, do not use the power saving function.



Continuous Water Dispenser Function Setting

1 This function is for dispensing ambient/cold water continuously. Touch CONST. button for 2 seconds

2 As LED (Red) is turned on, select desired amount of water to dispense.
(When the function is set, ambient water is selected by default.)

3 Touch COLD/AMBI button and press Water dispenser button, then continuous water dispenser function is set as sounding "Ding-dong"
(While dispensing water continuously, Water dispenser Button LED is turned off.)

* If countinuous water dispensing is undone for 10 seconds, the function is automatically released.
* Continuous hot water dispenser is unattainable.

Continuous Water Dispenser Function Release

While dispensing ambient/cold water continuously, the function is released by touching either COLD (cold water selection) or AMBI (ambient water selection) as sounding "Ding-Dong" (As continuous water dispenser function releases, LED is turned off.)

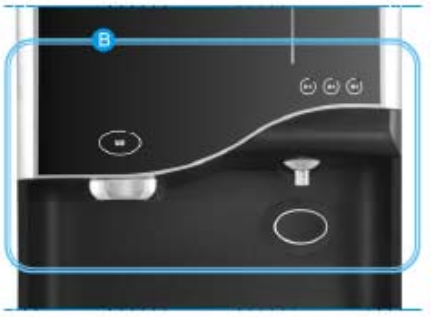
10-5 ICE AND WATER DISPENSING

It enables to dispense Ice and Hot water when the Lock function is released.

* If Lock function (of Ice and Hot water dispensing) is set, Ice dispensing and Hot water selection touch button do not function. Please use it after releasing the Lock function.

Ice Dispensing Mode

If ICE(ice dispense) touch sensor button is pressed, the door of the ice storage house is opened and ice comes out from the dispensing hole.



HOT LOCK(hot water lock) Function Release

If HOT(hot water selection) touch sensor button is selected and the water dispensing button is pressed, hot water comes out.

* Please be careful to avoid burns and use cups during hot water dispensing.
* If hot water operation LED is turned off, hot water is not dispensed because the heater doesn't work.

Cold Water Dispense Mode

If COLD(cold water selection) touch sensor button is selected and water dispensing button is pressed, cold water comes out.

* After early power ON water full LED is lighted up, cold water dispensing selection is available.

Ambient Water Dispense Mode

If AMBI(ambient water selection) touch sensor button is selected and water dispensing button is pressed, ambient water comes out.

* If hot water or ambient water is selected and it is not used for a given time period, the system will automatically switch into cold water dispense mode. (Default function)
* There is not a separate setting and release method for the use of ambient water/cold water/ice making operation. They operate automatically as designated by the program when the power is supplied.

10-6 UNDERSTANDING THE ICE MAKING PROCESS AND OPERATION

The ice making system of the IGUASSU ICE 500 automatically operates according to designed program settings after applying power to the product.

1. If power is supplied to the product by inserting the power plug, then ice making automatically operates without any manual setting.

2. if the level of purified water goes above proper operating levels, then all the ice created from the machine will be automatically removed by deicing action.

3. In order to produce cold water, the compressor and circulation pump must operate properly. (The cold water production process automatically operates according to designated programming.)

   Cold water operation

   This refers to an operation that makes cold water by continuously circulating and supplying water into the cold water tank.
   Water temperature in the cold water tank is automatically checked by the cold water temperature sensor, and if it drops below the set temperature, then the cold water operation will automatically stop.

4. If cold water production is operating properly, the ice making system will produce the ice according to the given water supply.

   Water supply action

   To supply about .25G(1ℓ) of cold water every 50 seconds into ice making tray in order to make ice.

   Ice making action

   To make ice by supplying cold refrigerant onto the ice tray as it is filled with water.

   Harvest action

   To an action to separate the ice which was made in the ice tray by supplying hot refrigerant onto the tray.

5. When the ice storage is full, the ice detection sensor will automatically stop the process.

6. Cold temperature control is applied to prevent ice cubes from melting by periodically sending cold air into ice storage.

7. If ice in the storage is not used for long periods of time, it may melt, and during ice dispensing, small ice cubes can come out.

   * TDSs(Total Dissolved Solids) of ice may increase according to the environment in which the ice is created.

- Even at times ice making function is disabled, dispensing cold water operates as normal.
- The lower the surrounding temperatures, the shorter the ice making process will take and the higher the surrounding temperatures, the longer the ice making process will take.
- Do not install or use the product in temperatures below 32°F(0°C) or above 100°F(38°C).

Examination/Repair Procedure

12

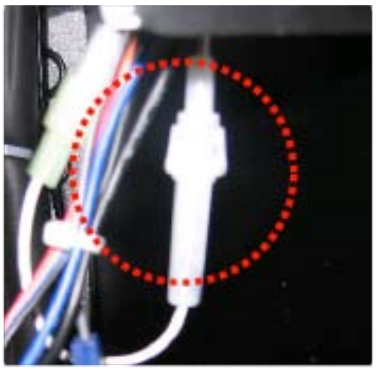
12-1 POWER

Power plug is inserted into a wall outlet but no LED lights.

*** Caution: Never touch electrical parts with wet hands**

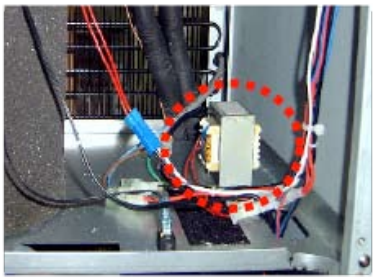
How to Diagnose

1 **Open the Front Lower Panel to find the fuse holder.**

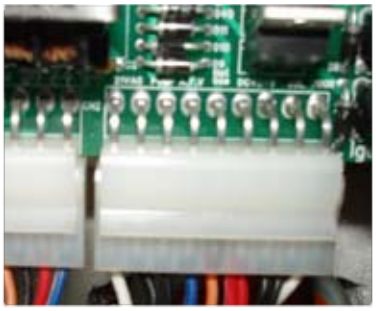


2 **Check the Fuse location, and see if the Fuse (inside the Fuse holder) is open. (Fuse: AC110V/8A)**
> Replace the fuse, if it is open.

3 **Uncover the Front Middle Cover and check the IN/OUT sockets and voltage of the transformer.**
- INPUT: AC110V (Wire: Black color)
- OUTPUT: AC21 (Wire: Red color)
> Replace the T/R if defected.



4 **Check if transformer OUTPUT (AC 21V) goes to the Controller PCB, and check all wire connections.**
> Replace the Main PCB if normal.



12-2 REFRIGERANT LEAK

If malfunction causes by leak or clogging of coolant,
> Send to ChungHo Repair Center

How to Diagnose

1 **Touch the back grill with your hand to determine temp. (During Ice Making 100°F ~ 140°F : Hot)**

2 **Coolant leak occurs at welding areas as marked below, check with the power meter.**
- If leaks, very low power (100W or below) is detected.

**** Please note that when the ice is releasing, the grill and dryer will be cold.**

12-3 HOT GAS LEAK

Hot gas leaks cause under performance in ice making and/or cold water making process.
> Send to ChungHo Repair Center

1 **Hot gas sol v/v: DC24V**
Coil (including Wire) + Body (mesh)

2 **When hot gas leaks due to foreign objects in hot gas sol v/v, EVA temperature goes up, thus no ice or thin ice will be made.**

3 **When hot gas leaks, heat transfers to ice making part. If temperature of the part reaches to 176°F, ICE FULL LED will be blinking.**
(If temperature of ice making part goes down below 158°F by turning off the system for a while and back on, ice making process will operate again.)

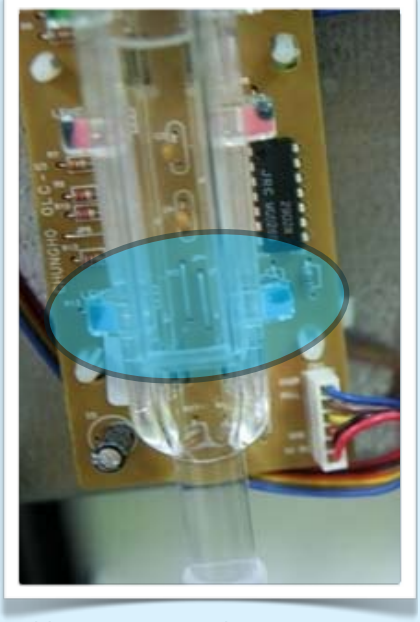
12-4 FILTRATION MALFUNCTION

Symptom

Water tanks do not get full.

How to Diagnose

1 Check to see if Ambient tank is (25%) full.



Cold water operates above (25%).

2 If clogged, it will prevent water flow. (OLC Mesh / Medium Filter)

3 Check to see if water is flowing after the Post Carbon Filter.

Check to see if water is purifying properly

Cause of Defect

1. Mesh clog 2. Defective Pump 3. Defective Sol V/V 4. Membrane clog

AS Procedure

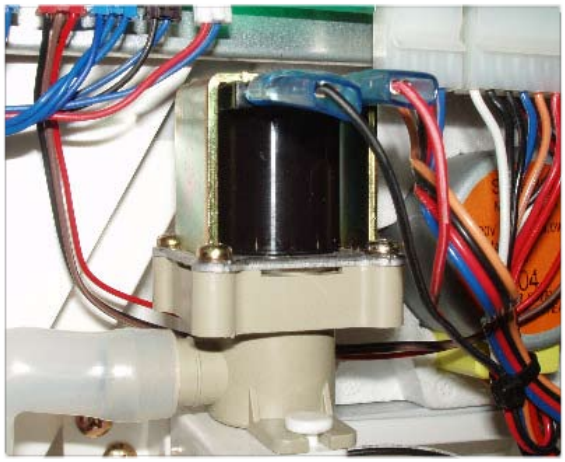
1) If Mesh / Medium Filter are clogged: Clean or replace.

2) Check to see if water is coming out after the Post Carbon Filter.
   a. Adaptor b. Sol V/V c. Booster Pump d. Membrane Filter.

12-5 INLET SOL V/V DEFECT

Faulty inlet solenoid Valve causes water dispensing malfunction due to not supplying water to the cold water tank.

1 **Check inlet solenoid valves located at the bottm of Controller PCB.**
- Check its voltage is DC24V supplies to Sol V/V at terminal when dispensing.
> If not, replace Sol V/V



2 **- Check if there is leak at the Sol V/V.**
- Check wire connections.

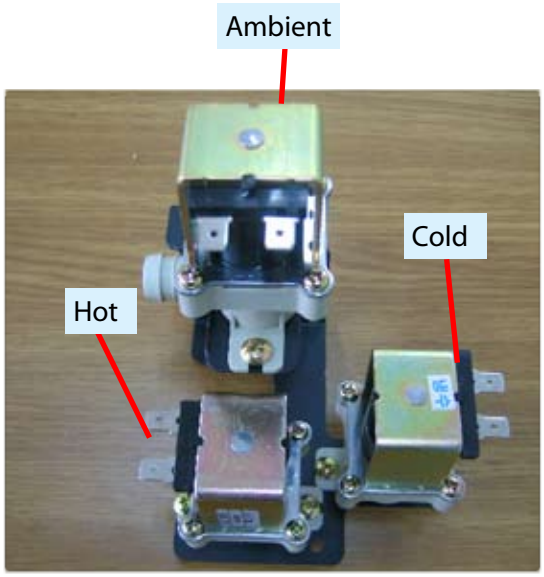
3 **Inlet Sol V/V and/or Cold level Sensor Defect (Defect if over 5 minutes total for 3 consecutive times)**

12-6 COLD/AMBI/HOT WATER SOL V/V DEFECT

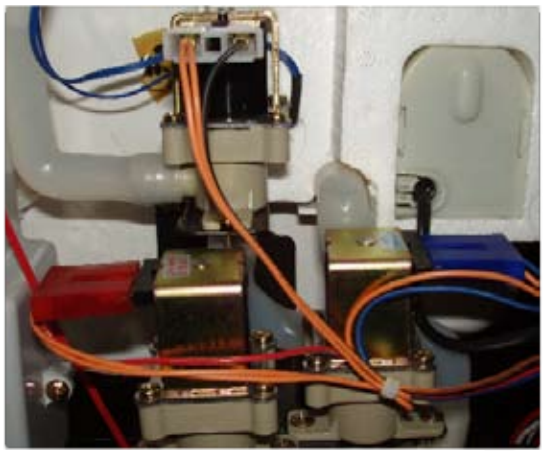
Faulty water dispensing solenoid Valve (Hot/Cold/Ambient) causes water dispensing malfunction.

1 **Open front upper panel to check hot/cold/ambient water dispensing solenoid valves.**
- Check its voltage is DC24V supplies to Sol V/V at terminal when dispensing.
> If not, replace Sol V/V

- Check if there is leak of each Sol V/V.
- Check wire connection
Top : Clear
Bottom Left : Red
Bottom Right : Blue



2 **Check connections of each Sol V/V bracket**
- for all : Inlet Sol V/V, Ambi Sol V/V, Hot Sol V/V
*** Cold Sol V/V is only for Cold water.**

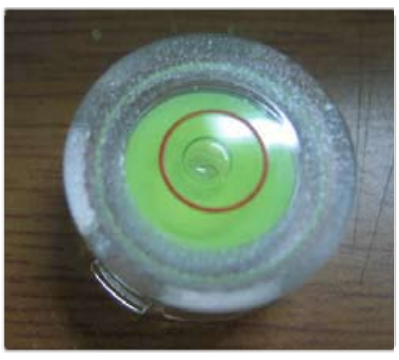


12-7 PRODUCT LEVEL DEFECT

If the product is not properly leveled, it may cause ice to over freeze and/or freeze irregularly.

1 **Check the product's level by using a level detector which is located under the drip tray.**

2 **Set the level accordingly.**
(Water leak may occur if the product is not leveled by more than 3 degree.)



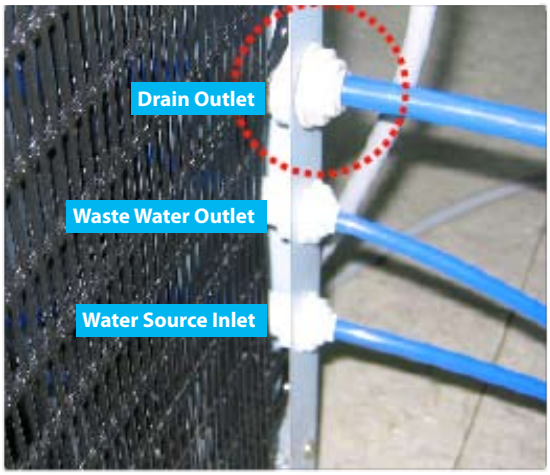
12-8 DRAINAGE

1 **Water may flow over to drip tray if the drain is not working properly.**

Water goes out to drainage outlet,
- When water dispensed, water goes out through drip tray
- When Ice melts from the storage
- When cold tank overflows
- When ambient tank overflows

2 **Check the connection if it's bent or twisted. (Check also 3/8" Equal Tee, 3/8" BulkHead)**

3 **Check if drain works properly. (If not, the drain pump must be installed.)**



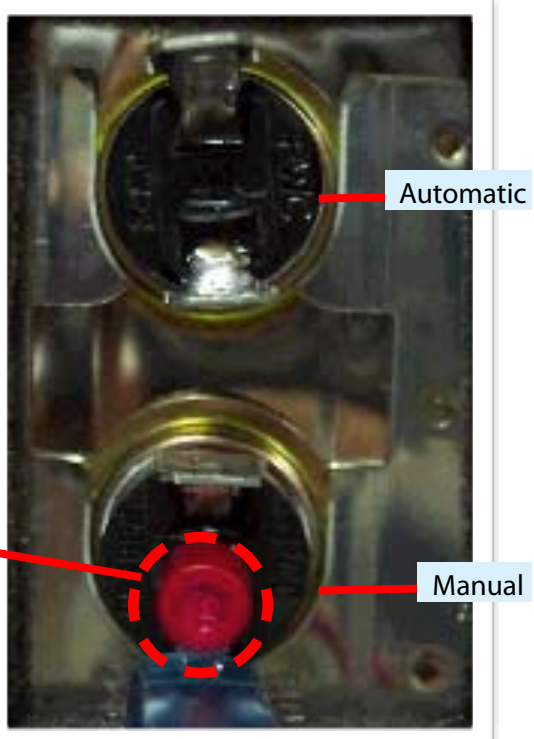
12-9 HOT WATER MALFUNCTION

If hot water overheated, ambient tank's temperature goes up then it could causes overflow.
Check electric resistance of hot water temp-sensor and manual bimetal.

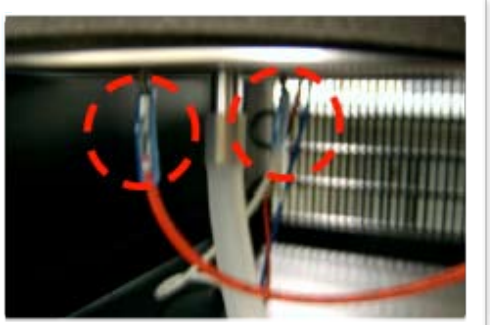
1 **Hot water temp-sensor : Check electric resistance.**
Auto Bimetal : 90N (Max 199.4°F)
Manual Bimetal : 105N (when Off, 221°F)

2 **Check if bimetals are affixed properly onto hot water tank's surface.**
Top: Automatic bimetal
Bottom: Manual

3 **Press the Reset Button of the manual bimetal.**
When off, Click sound will occur.



4 **Check heater wire connection and applied voltage.**
- Applied Voltage : AC 220V

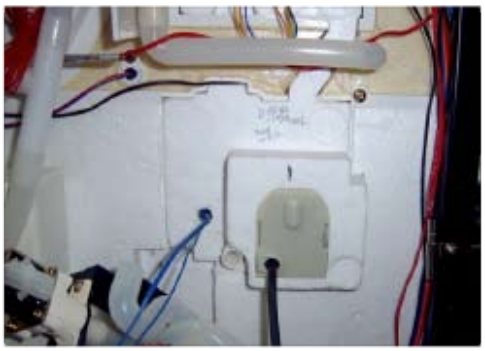


Trouble Shooting

12-10 CIRCULATION PUMP DEFECT

Check leak/noise/voltage of the Circulation pump.

1 **Open the Front upper cover to check the circulation pump located at the bottom right.**
- Voltage check: AC220V/60Hz
*** Empty the cold tank before detaching the circulation pump from the body.**
- Detach Inlet Sol V/V
- Drain all cold water by dispensing it.
- Detach EPS
- Detach the Circulation pump by rotating it 90° clockwise.



*** Voltage is applied and not rotating, replace the Circulation pump.**

2 **Check if any foreign object inside the circulation pump.**

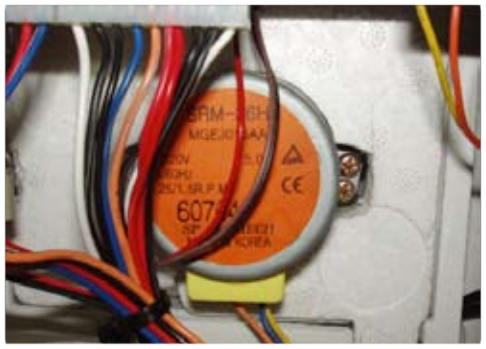
3 **Check leakage around pump head rubber.**
(Check rubber ring of the circulation pump.)

4 **Circulation pump defect.**

12-11 TRAY MOTOR COUPLER

Tray motor coupler may be broken due to bridge-shaped ice, circulation pump defect, and ice rejection malfunction.

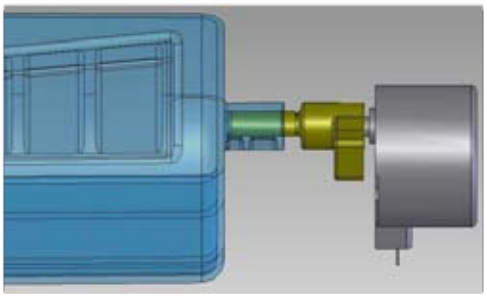
1 **Open Front upper panel to check the Synchronous Motor.**
Applied volatage : AC220V/60Hz



2 **Detach the motor to check breakage of motor coupler.**

3 **Rotating Drip Tray + Motor coupler + Synchronous Motor.**

4 **Attach Tray Motor coupler on the Synchronous Motor.**



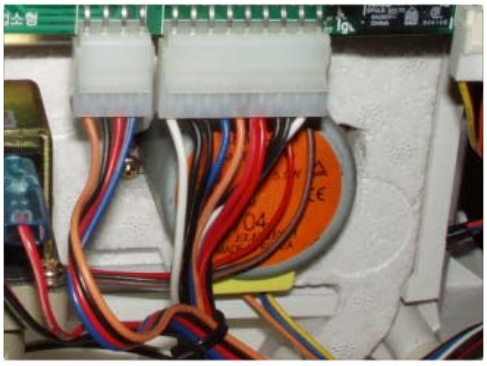
12-12 MICRO SWITCH ASS'Y - SYNCHRONOUS MOTOR

Defects on Micro Switch Ass'y of the Synchronous Motor cause malfunction on ice making and cold water making process.

1 **Open Front upper panel to check the switch of Synchronous Motor. (located inside EPS) (Micro Switch 2EA)**

2 **Check the lever and connections of the drip tray motor.**

> Replace parts accordingly if faulty.



3 **Switching time from Ice making S/W to Ice rejection S/W is normally under 16 seconds.**

- Avg. 16 sec. when from ice-rejection to making.

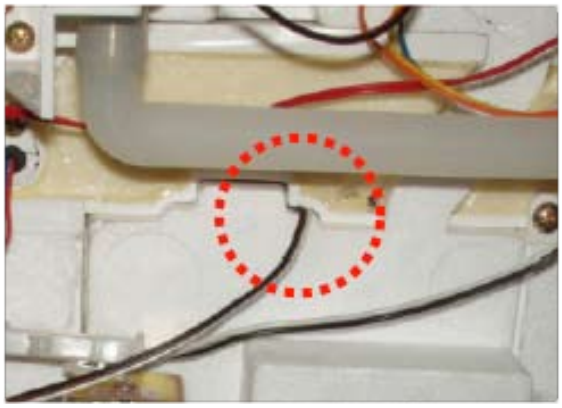
4 **Water drops onto Main PCB cause malfunctioning.**

> If leaks, replace Controller PCB.

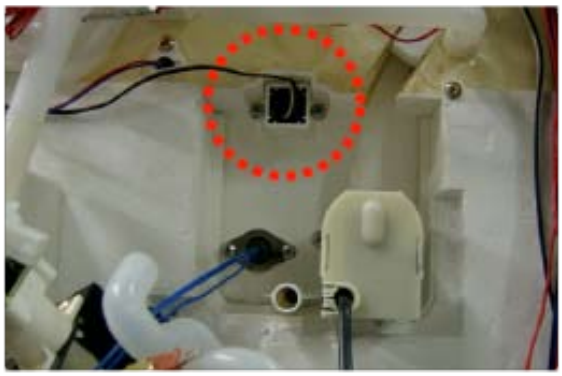
12-13 COLD WATER LEVEL SENSOR DEFECT

Defects on cold level sensor cause either not supplying or over-supplying water to cold tank.
> Replace it if faulty.

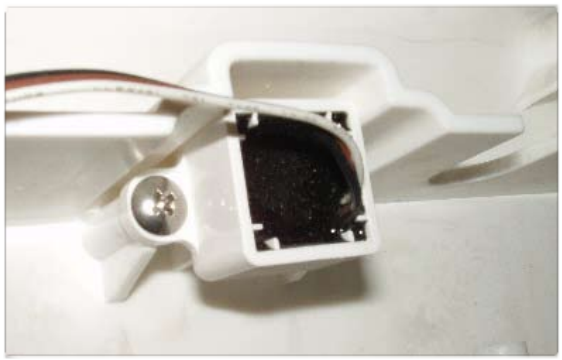
1 **Check cold water level sensor by opening the front upper cover.**
- If cold tank is overflowing by over-supplying, check after replacing the cold level sensor.



2 **Check for defect of O-ring inside the Cold water level sensor (square-shape).**



3 **Cold water level sensor**
- 3 lines : GND, Signal, DC12V
*** GND helps stabilizing the voltage.**
- When full in the cold tank, the sensor detects and stops water supplying into the cold tank. (Detection/Release delay 2 sec.)

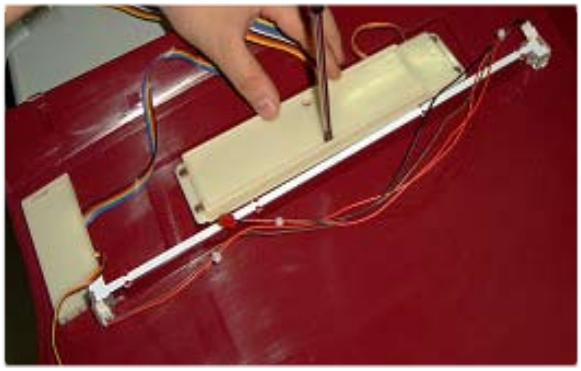


4 **Cold water level sensor defect (Inlet sol v/v defect)**

12-14 DISPLAY MODULE DEFECT

Display or touch button may not work due to poor connections and PCB assembly.

1 **Function PCB**
- Check wires and connections
- Check the sponge inside
- Check for humidity inside



2 **Dispensing PCB**
- Check for residual water and remove if any
- Check if the PCB is affixed tight

3 **Ice discharging PCB**
- Check for residual water and remove if any
- Check wires and connections
- Check if the PCB is affixed tight

4 **Check in/out wire connections of all PCBs.**

AS Procedure

If malfunctions occur on touch buttons and/or LEDs of the front display, replace **Front Upper Ass'y.**

12-15 COLD WATER SENSOR DEFECT

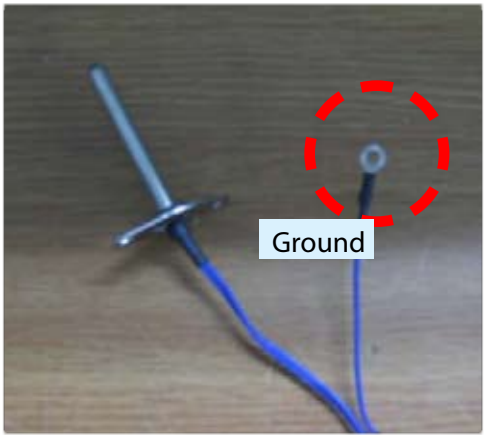
Faulty cold water temperature sensor cause malfunction of cold water and ice making.
- When open: reconnect it if disconnected, and replace the sensor if defected.
- When short: Replace the sensor

1 **Check the cold water sensor by opening front upper panel.**
- 3PIN : 5V, Signal, GND
- GND is connected to the bracket screw in order for the sensor to work properly.

2 **GND for cold sensor is affixed into SUS bracket.**

3 **Pull out the sensor by removing heating insulation. (O-ring inside, check for leakage)**

4 **Cold Sensor**
- left: sensor pole, right: GND
*** Affix GND onto cold sensor fixed area.**

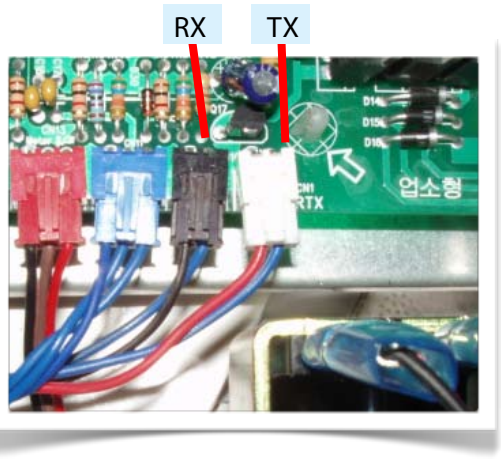


5 **Defects display when Coolant leakage and cold water process continues 60 minutes for 3 consecutive times.**

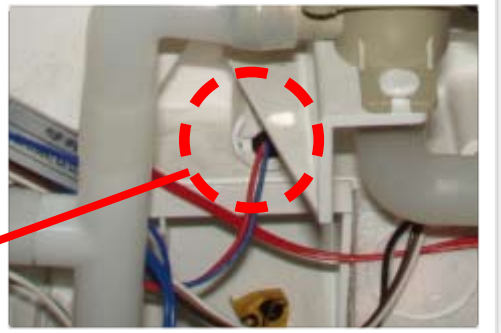
12-16 ICE FULL SENSOR (TX, RX) DEFECT

When displays Ice Full led on when it is not, or not display Ice Full led when when it is full.
> Replace the sensor if faulty.

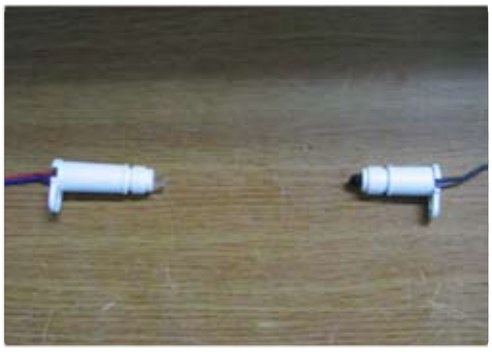
1 **Open the front upper panel to find the Transmitting Sensor(TX) at the bottom left of the water tank, and open the rear panel to find the Receiving Sensor(RX) at the bottom right of the water tank.**



2 **Ice full transmits for 5 seconds by pressing Ice dispensing button.**



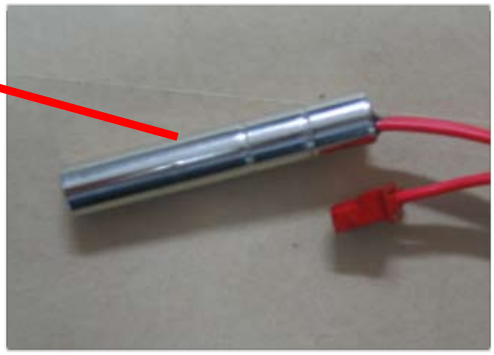
3 **2 Pin housing**
- White : Transmitting part
- Black : Receiving part (located on the back of the unit)



12-17 ICE FULL LED DEFECT

1 Open front upper panel to find the switch inside the Synchronous Motor. (inside EPS)
- Ice Full LED Blinking :
  exceeding detection time (60 sec)
- Ice Full LED Blinking :
  S/W pressed simultaneously (60 sec)

2 - Ice Full LED blinking :
  when environmental sensor is faulty
- Ice Full LED blinking :
  when cold water sensor is faulty
- Ice Full LED blinking :
  when circulation pump is faulty (stop)
- Ice Full LED blinking :
  when inlet sol v/v or cold water level sensor is faulty

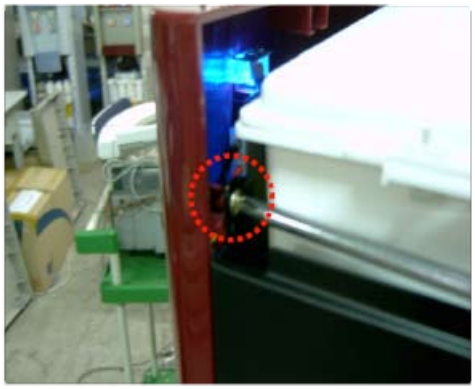


3 Ice Full led is ON when ice making time is shortened by half and it occurs for 3 consecutive times due to over cooling.
(It caused by breakage of drip tray motor coupler, defect circulation pump, and/or malfunction on ice discharge.)

12-18 PCB CONTROLLER

1 **Unscrew bolts from the top cover and the rear panel (2EA).**

2 **Unscrew bolts from the side panels. (2ea)**

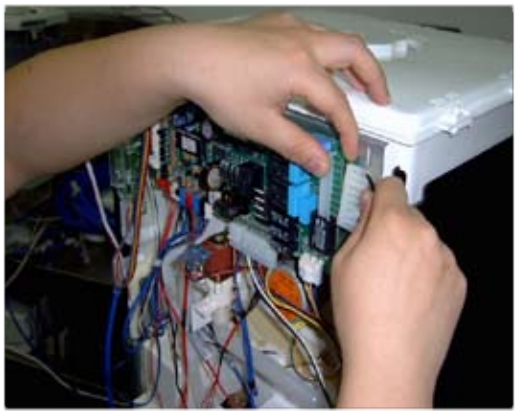


3 **Disconnect wires on the front upper panel from the Main PCB controller.**

12-18 PCB CONTROLLER (CONT'D)

4 **PCB Cover after front upper panel detached.**
(2 screws need to be unscrewed to detach PCB cover)

5 **Detach PCB cover. Disconnect all wires connected to Main PCB Controller.**

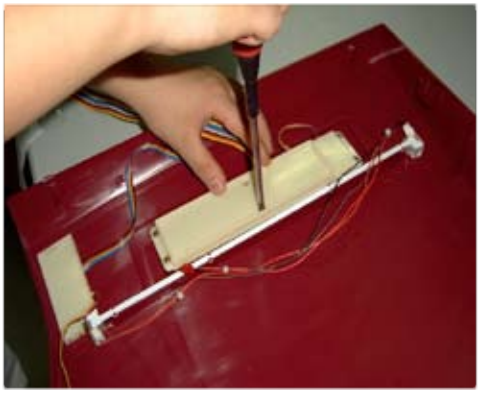


6 **Press PCB holder (5ea) to detach it from PCB control panel. Replace Main PCB controller.**

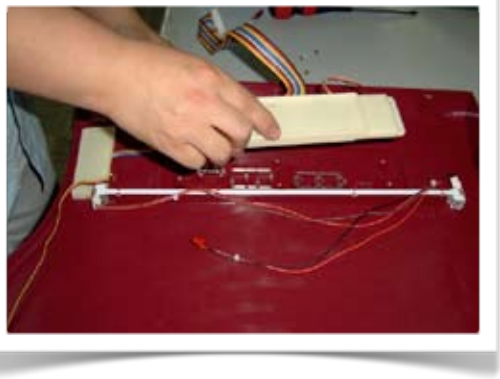
12-19 FUNCTION SELECTION PCB

1 Detach top cover (2 screws), and front upper panel (2 screws).

2 Remove the screws : M3X8 (6EA) first on Function Selection PCB of the front upper panel.

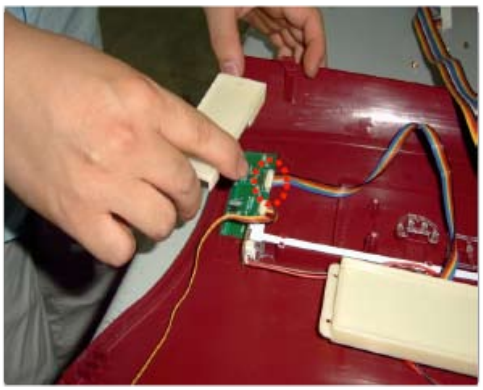


3 Detach Function Selection PCB carefully.

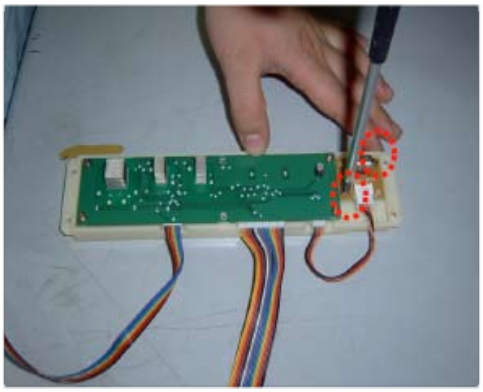


12-19 FUNCTION SELECTION PCB (CONT'D)

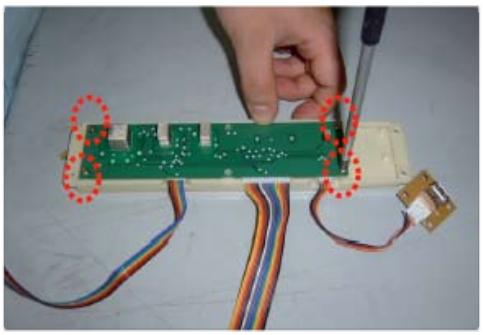
4 **Disconnect wire between Function Selection PCB and Dispensing PCB.**



5 **Unscrew the screws: M3X6 (2EA) that hold USB port from the Function selection PCB.**

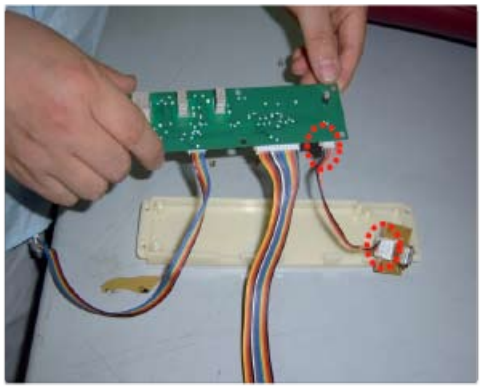


6 **Unscrew the screws: M3X6 (4EA) that hold the Function selection PCB.**

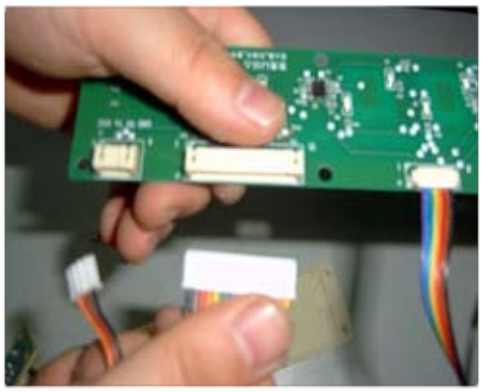


12-19 FUNCTION SELECTION PCB (CONT'D)

1 **Disconnect wire between Function selection PCB and USB port.**

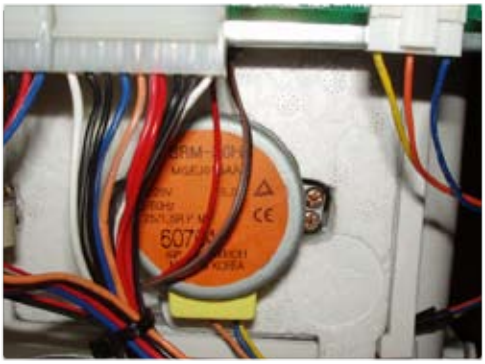


2 **Disconnect all wires from the function selection PCB and replace it.**



12-20 TRAY MOTOR/MICRO SW CHANGE

1 Detach Top Cover and Front upper panel.



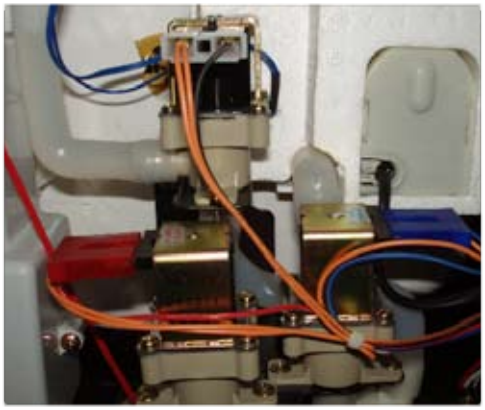
2 Remove or replace Rotating drip tray motor.

3 Detach Cold water inlet Sol V/V.

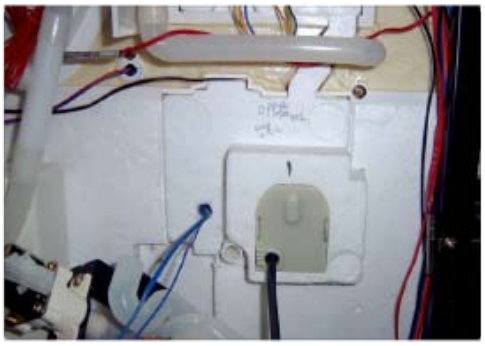
4 Detach EPS Motor panel and replace micro S/W.

12-21 CIRCULATION PUMP/COLD TEMP SENSOR CHANGE

1 **Remove Top cover & Front upper panel.**



2 **Detach Cold, Ambient, and Hot water sol V/V, and detach Cold Sol Inlet Silicon, Ambient Sol inlet silicon.**



3 **Detach Hot, Ambi, Cold Sol Ass'y and EPS.**

4 **Replace circulation pump, cold water temperature sensor, and/or cold water level sensor.**

12-23
SENSOR TABLE

12-23-A. ICE MAKING TEMP SENSOR, COLD WATER TEMP SENSOR TABLE

(°F)	(KΩ)	(°F)	(KΩ)	(°F)	(KΩ)
-22	117	41	22.2	104	5.8
-13	90	50	18.1	113	4.9
-4	70	59	14.7	122	4.1
5	55	68	12.1	131	3.5
14	43.3	77	10	140	3
23	34.5	86	8.3	149	2.6
32	27.6	95	6.9	158	2.2

12-23-B. ENVIRONMENT SENSOR TABLE

(°F)	(KΩ)	(°F)	(KΩ)	(°F)	(KΩ)
-22	885	41	127	104	26.6
-13	652	50	99.5	113	21.8
-4	485	59	78.5	122	18
5	364	68	62.5	131	14.9
14	276	77	50	140	12.4
23	211	86	40.3	149	10.4
32	170	95	32.6	158	8.7

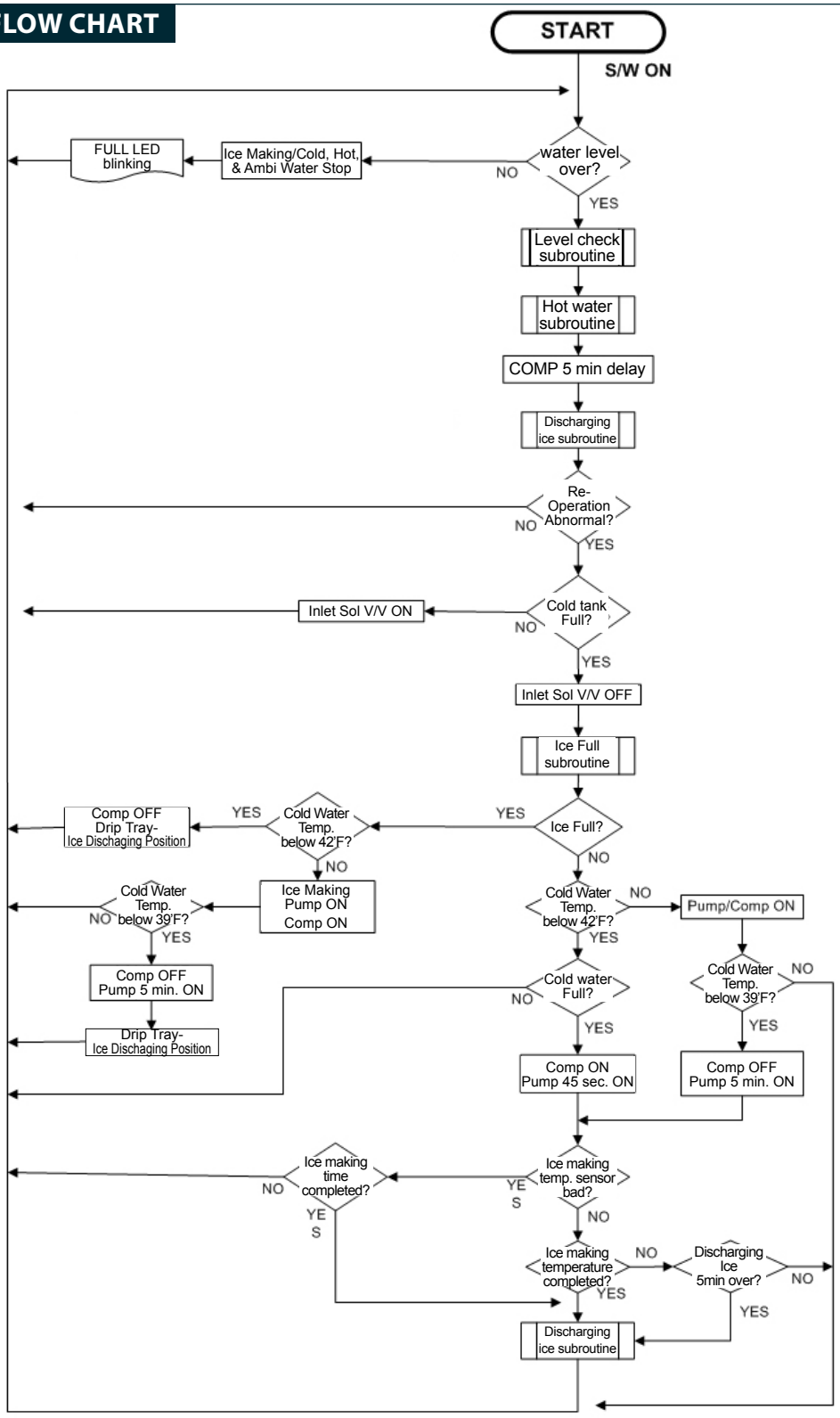
12-23-C. ICE MAKING TEMP SENSOR, COLD WATER TEMP SENSOR TABLE

°F	Ice Making Time (Minute)	°F	Ice Making Time (Minute)	°F	Ice Making Time (Minute)
32	6.4	59	7.4	86	10
41	6.4	68	8	95	10.8
50	6.7	77	9	104	12.9

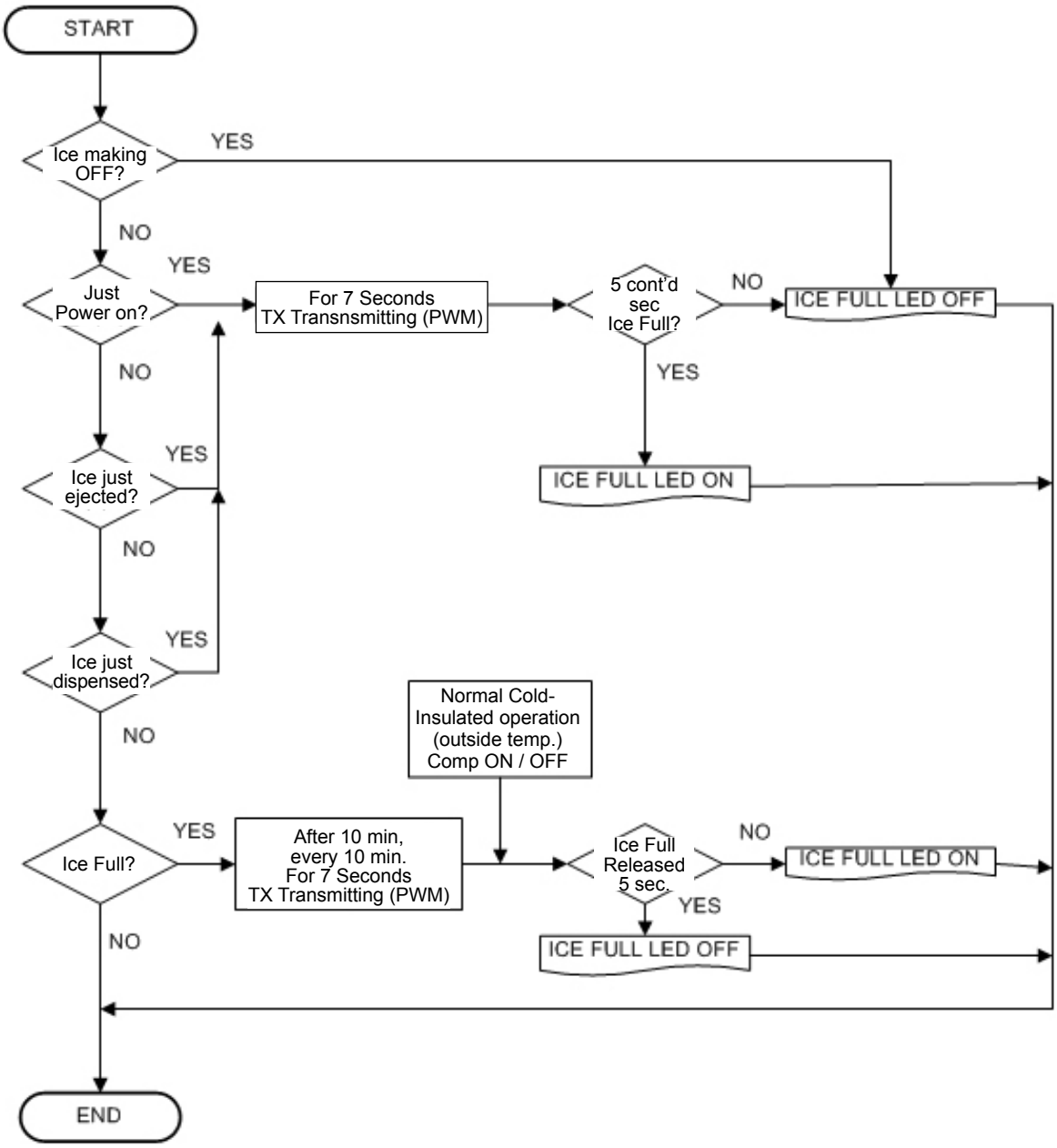
Flow Charts

13

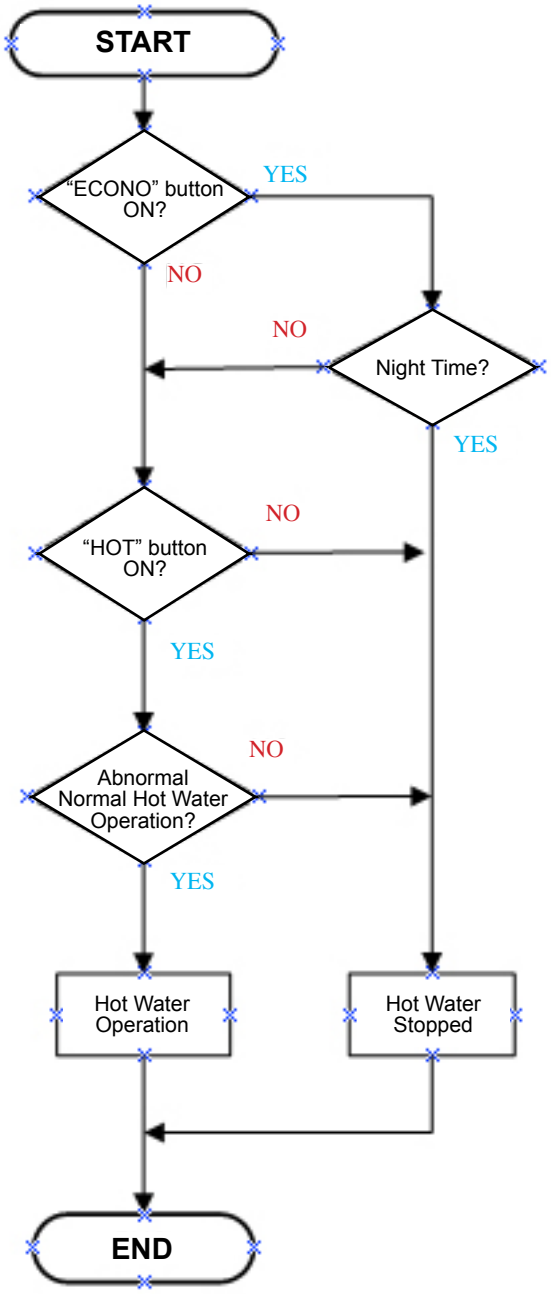
13-1 MAIN FLOW CHART



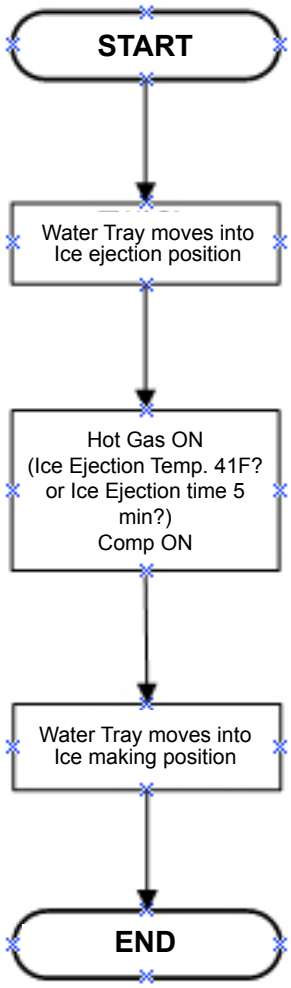
13-2 ICE FULL SUBROUTINE



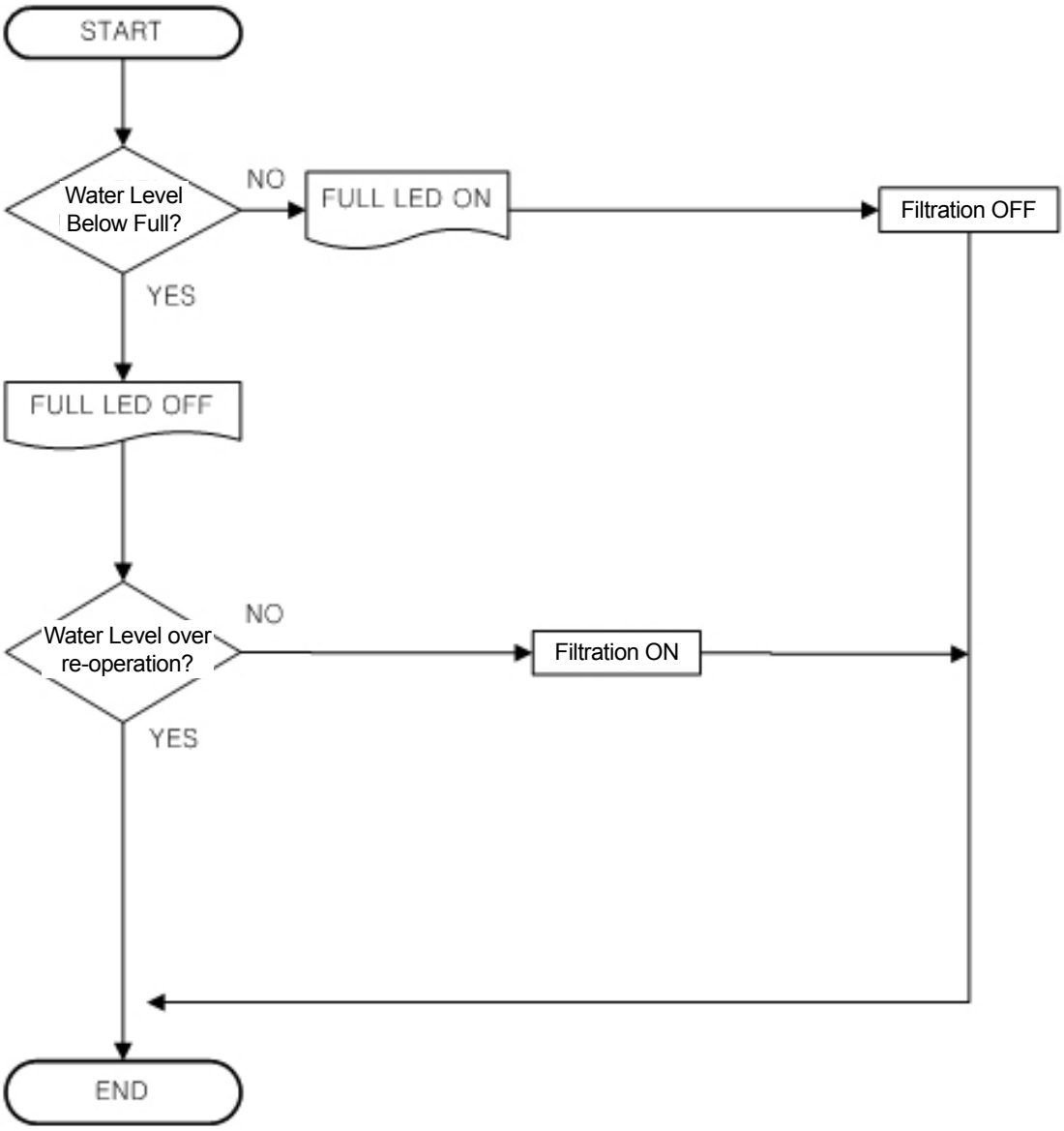
13-3 HOT WATER SUBROUTINE



13-4 ICE EJECTION SUBROUTINE



13-5 WATER LEVEL CHECK SUBROUTINE



ChungHo USA
1240 N. Simon Circle Suite A
Anaheim CA 92806
888.758.1234
www.chunghousa.com
techsupport@chunghousa.com